

# THE ARCHITECT & BUILDING NEWS

22 APRIL 1954

VOL. 205

No. 16

ONE SHILLING WEEKLY

- HOUSING AT HARLOW NEW TOWN
- SCHOOL IN HERTFORDSHIRE
- ELECTRIC FLOOR HEATING

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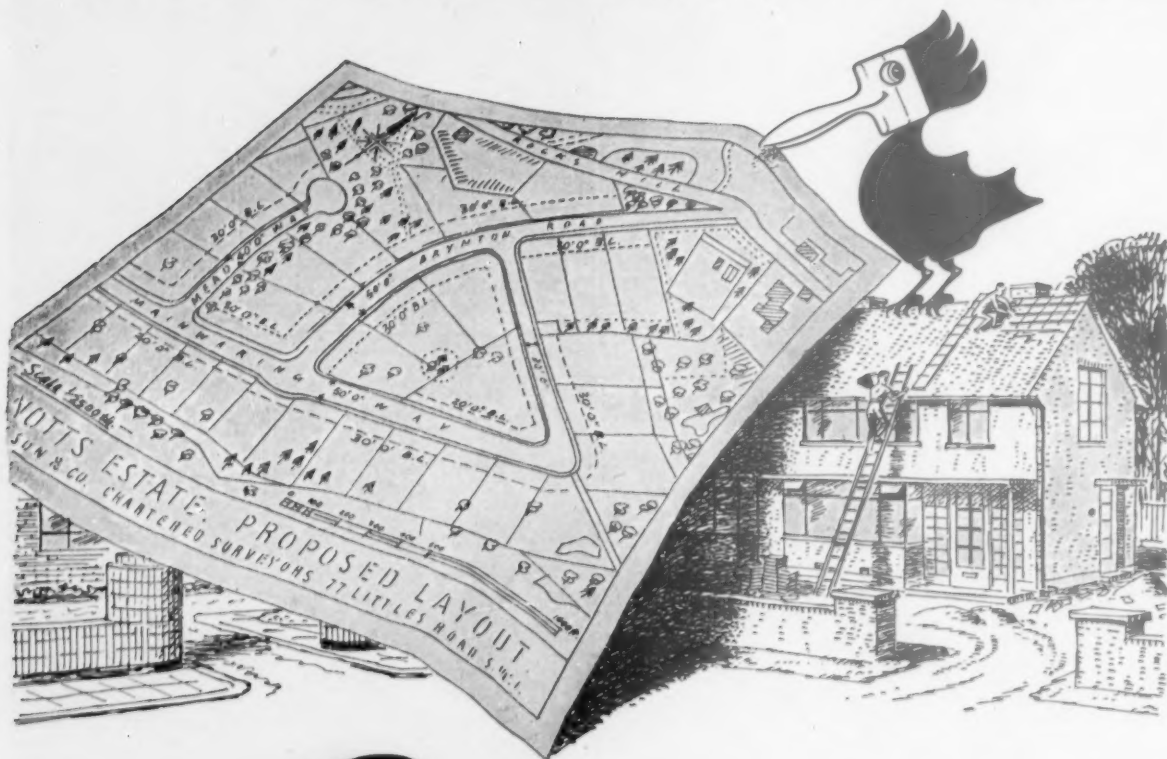
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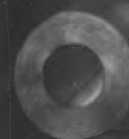
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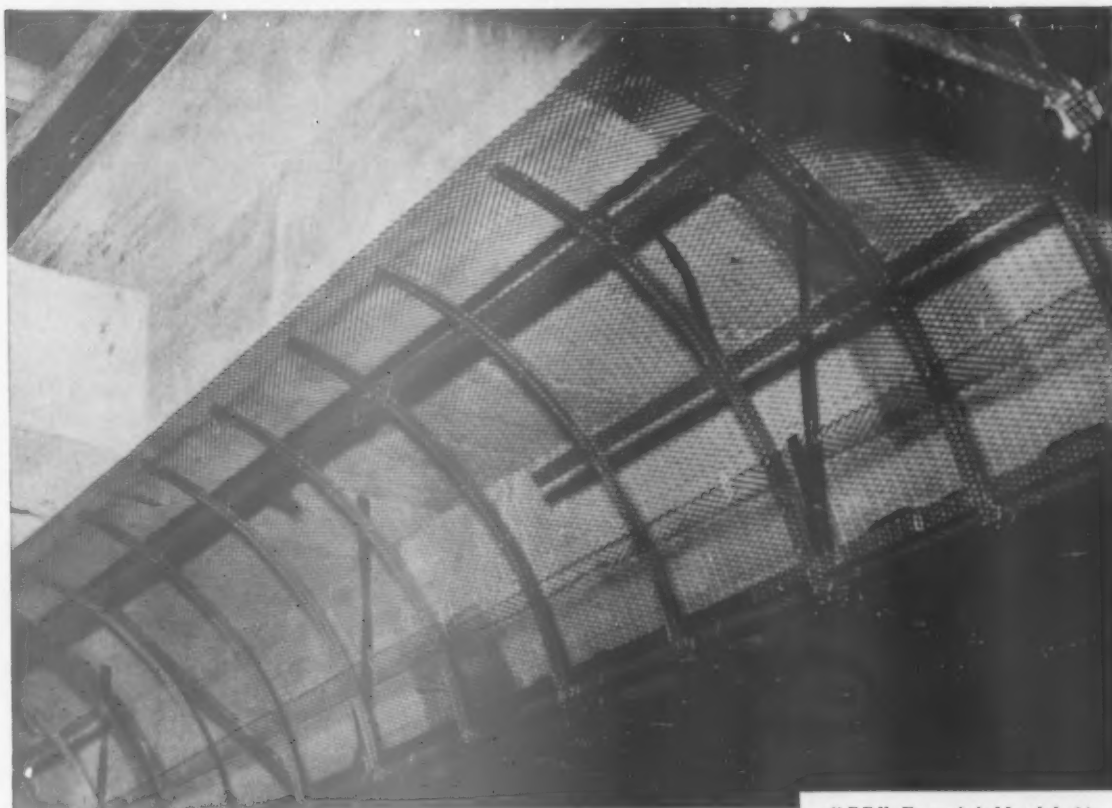
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"BB" Expanded Metal lathing background for suspended ceiling. Supplied and erected for new branch of Martins Bank, Exeter. Architects: Messrs. Lucas, Roberts & Brown. Contractors: Messrs. Soper & Ayres.

Many important buildings constructed over the past fifty years incorporate Expanded Metal lathing and plaster for suspended ceilings, partitions, etc. These include: University College, Dublin; County Hall, London; Marischall College, Aberdeen; Royal Naval College, Dartmouth; Shell Mex House and Admiralty Arch, London.

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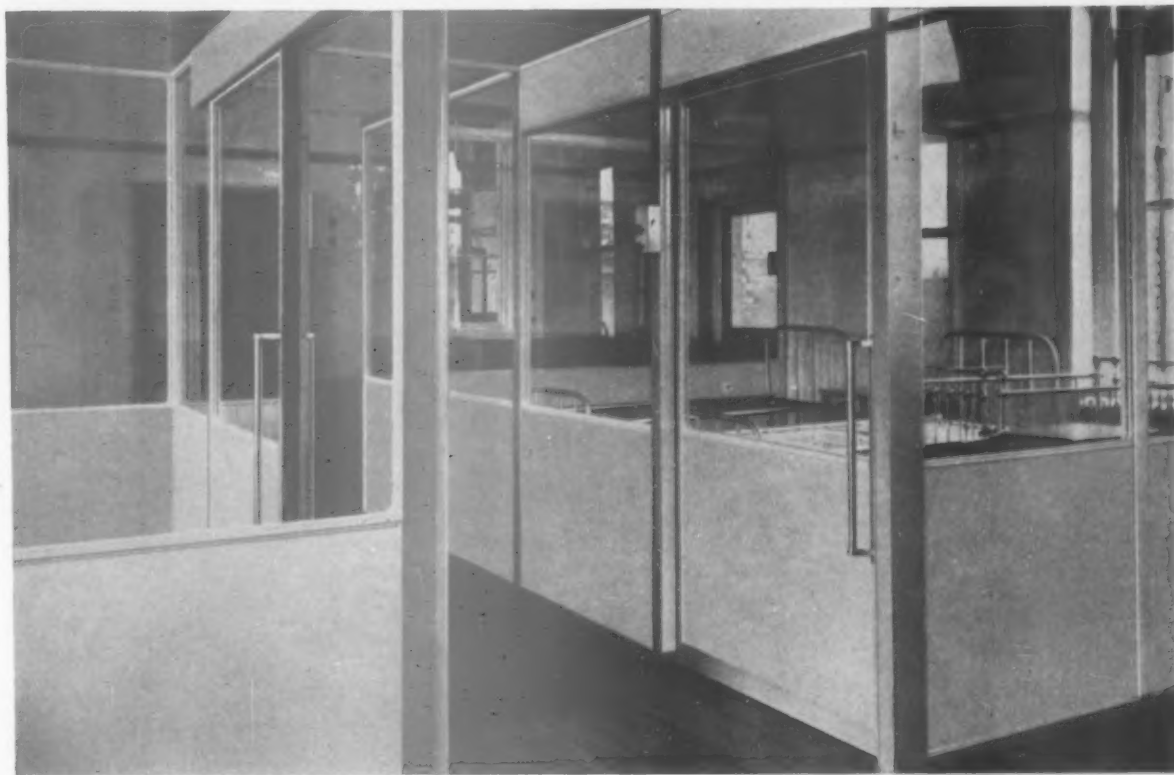
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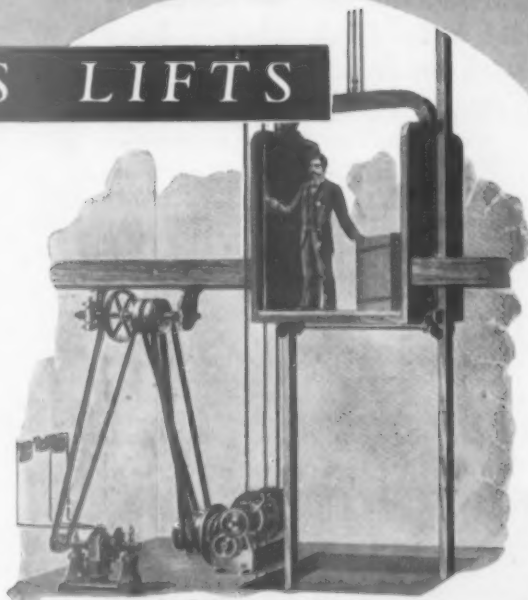
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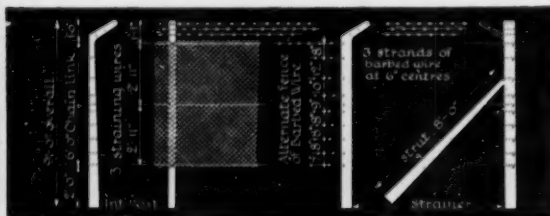
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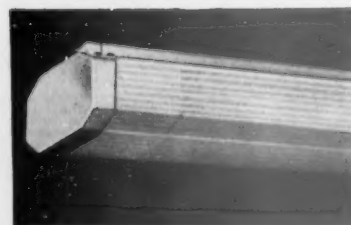
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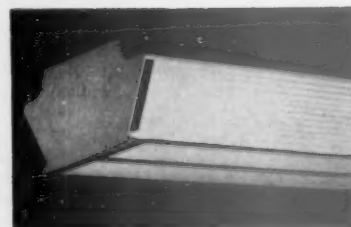
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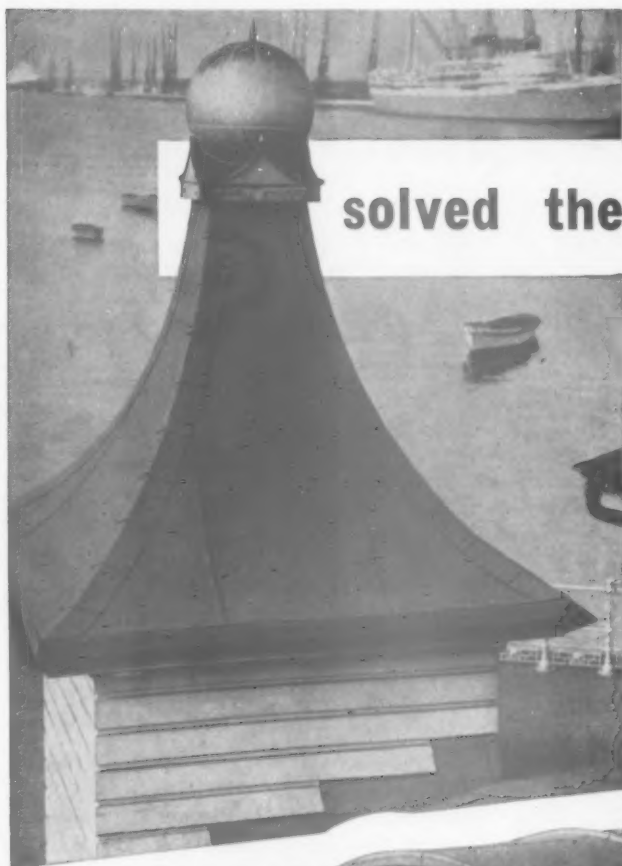
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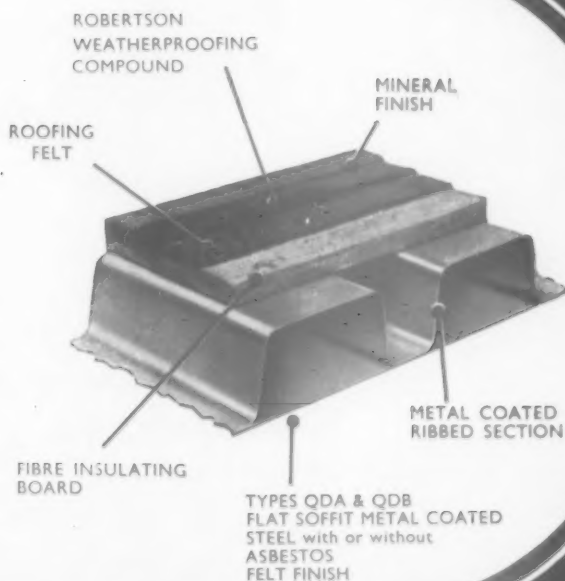
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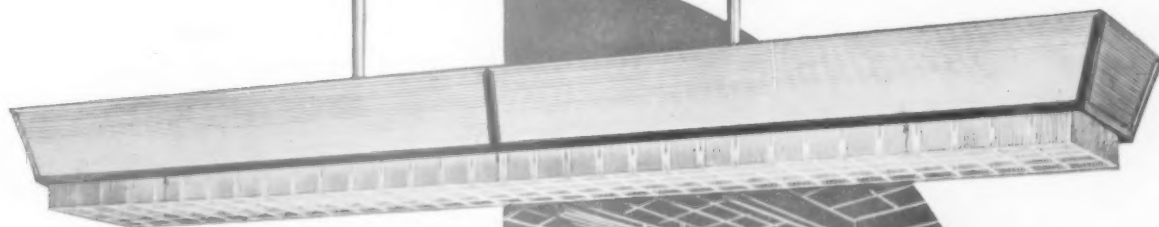
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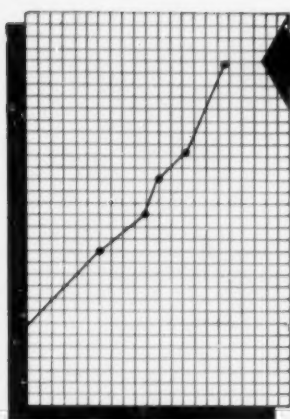
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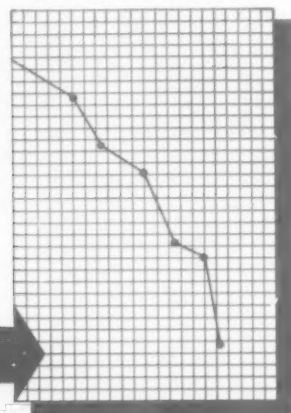
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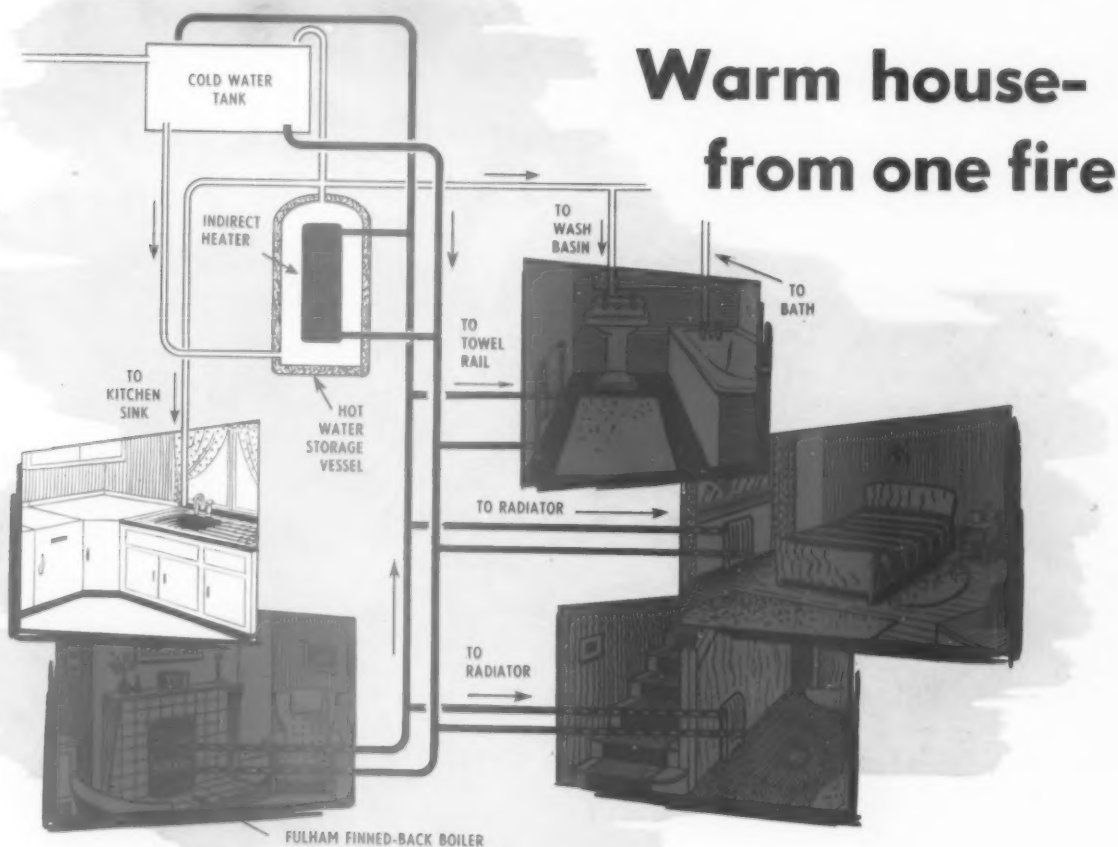
Organized by 'MECHANICAL HANDLING'—the journal of industrial mechanization



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MONDAY, JUNE 29, 1953

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## HOUSE AND GROUNDS

**M**R. MARPLES, Parliamentary Secretary M.O.H. & L.G., during the third reading of the Housing Repairs and Rents Bill on April 13, mentioned large Victorian mansions standing idle which could "with ingenuity be converted into reasonable places for old people." The Government, he said, wished to encourage authorities to convert these places.

Since the war there have been a number of conversions of large mansions into maisonnettes and flats which have prolonged their economically useful life. These conversions include the advantage to the occupiers of the grounds to the house.

Such properties are advertised in increasing numbers, in some such description as "Unique mansion of character standing in park-like grounds with woods and lake, situate on the Hopshire-Downshire border within one hour by rail of Wendon." The price asked is often not much above the value of the land alone. There will be a continuous supply of these white-elephantine mansions coming into the market as the owners can no longer find the servants necessary to run them, or pay the cost of upkeep after the tax-gatherers have been paid. Some large houses have found a new use in connection with the running of special courses for industry. But even when all the needs of this kind and of lunatic asylums, prep. schools and nursing homes are satisfied, there will remain a residue whose future is problematical. As Mr. J. F. Q. Switzer said in his recent paper on land use and the life of buildings, "When a building has given many years of service, and has paid for itself . . . one need have no regrets at demolishing it. For if a building is to be retained, it is because it has an economic life, not because the structure is sound."

The choice open is then fairly wide. If the house itself is suitable for conversion, it may be split up into a number of maisonnettes; if unsuitable it could be demolished and the estate redeveloped for con-

temporary requirements, among which are the needs of old people and retired people who are not necessarily without means, but who wish to move out of excessively large accommodation into small labour-saving flats in pleasant surroundings. Many people like the idea of living in these large old houses, but the problem of transforming them into small, self-contained units is considerable, especially the plumbing, and it might be better to concentrate on the site rather than the building when considering the best way to make use of these places.

The fundamental problem for old people is loneliness. They want above all that their children should come to visit them. In the hands of a skilful architect, such an estate could be redeveloped in terms of flats or houses, planned to suit the requirements of a community of retired people; the mansion might be reduced or lowered to provide hostel accommodation for visiting friends and relatives, or for clubrooms; and the existing grounds maintained at a high level. Re-housing of old people should help to some extent in the work of slum clearance, which must have the first call.

It is not often that architects act as estate developers either because they have not the necessary capital, or because extensive activity in this field might lead to loss of professional status. But in the re-development of large houses in extensive grounds the architect would probably be the right person to see the best possibilities.

It has recently been reported that a "beauty spot adjoining the Welsh National Park on the Cambrian coast" has been purchased by a well-known Birmingham architect whose name was not divulged. This area of 130 acres with a mile-long sea frontage is said to be popular with summer visitors, and planning permission has been granted by M.O.H. & L.G. for the layout of a self-contained residential estate with cottages in local materials, shops, chapel and "other amenities." No caravans

will be permitted. If this project materializes and is a success in both the financial and architectural senses, this idea might be extended to include other estates on a speculative basis. The main objective is that the best use should be made of estates that in the aggregate must cover a considerable area of land.

## EVENTS AND COMMENTS

### BE AN ARCHITECT AND SEE THE WORLD

Architectural globe-trotting is again in full swing with Professor Robert Matthew off to Australia for a month, Mr. A. R. F. Anderson in Saudi Arabia, Mr. Anthony Chitty just back from Baghdad and Sir Hugh Casson from Copenhagen, where he was made an Honorary Academician at the Royal Danish Academy's bi-centenary celebrations. This was a great honour which seems to have passed unnoticed in the Press.

### ARCHITECT TREEMAN BEAUTIFIES LIVERPOOL

Mr. J. Roy Parker, a young Liverpool architect, has, according to a newspaper report, organized a private planting programme for providing trees for the city. He is starting with two trees in Saudi Arabia, Mr. Anthony Chitty just back from Baghdad and Sir Hugh Casson from Copenhagen, where he was made an Honorary Academician at the Royal Danish Academy's bi-centenary celebrations. This was a great honour which seems to have passed unnoticed in the Press.

### WHEN IS A BUILDING TEMPORARY?

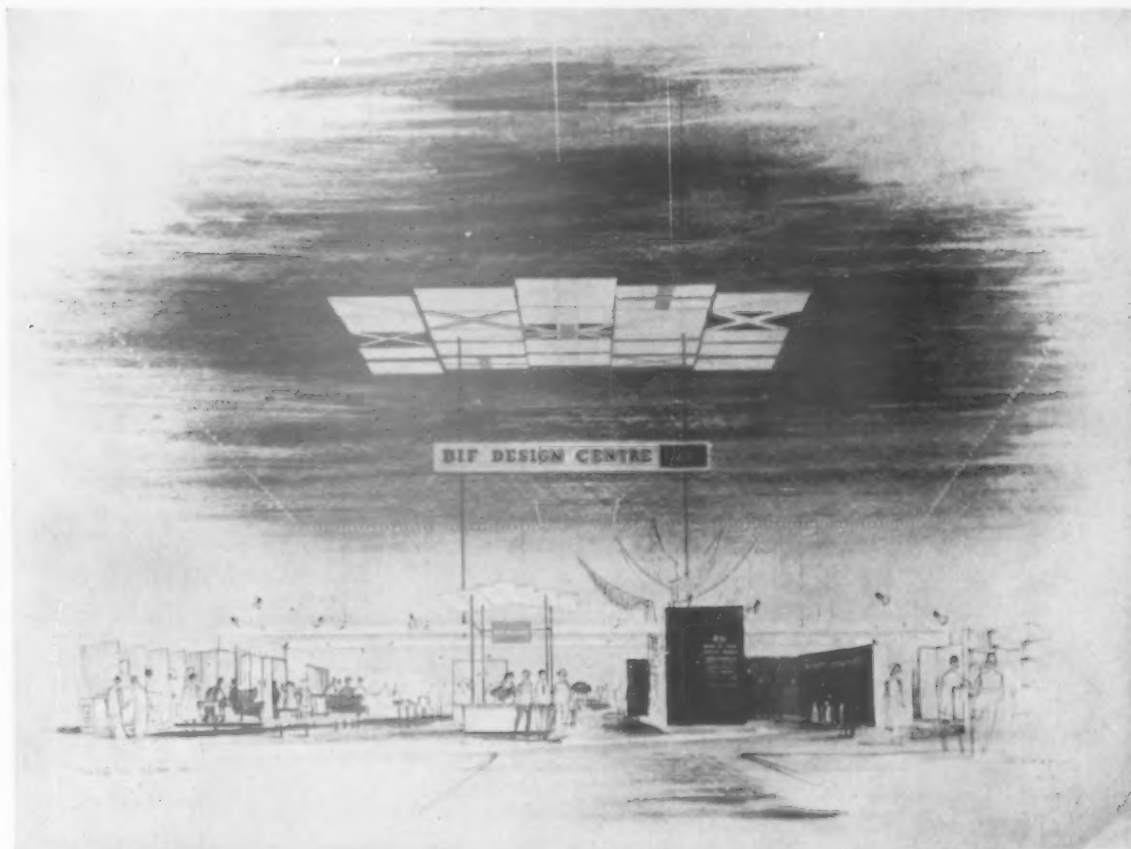
One of the problems now facing the further rebuilding of Coventry is that numbers of temporary shops are due for replacement by permanent buildings. Mr. D. E. E. Gibson, the city architect, spoke about this in a recent talk to the Birmingham and Five Counties Architectural Association. He pointed out that you could get as much profit from a temporary shop as from a permanent one and at lower cost. There was, therefore, likely to be considerable opposition to the idea of being uprooted and having to get on with decent building. While I sympathize with Mr. Gibson's desire to see Coventry rebuilt, it is also easy to see the shopkeepers' point of view. Temporary buildings have a way of being very long lived. They are designed and built economically and as a result often do their job very well. This is particularly true of some post-war-damage shops which I have seen. In many ways I prefer them to the "temples of commerce" of our big towns and I very much hope that Mr. Gibson will be able to bring in the good points of the temporary shop and exclude those of the pompous store when he rebuilds the shopping centre of Coventry. Because, like the cathedral and civil defence in Coventry, it must go on.

### THE PENDULUM SWINGS

I hear reports from all around of dwindling numbers of students in schools of architecture. I know of two schools where there is only one student in the first year and students of the South-West Essex Technical College recently demonstrated against a proposal to close the department of architecture there. A few years ago architecture was all the rage and far too many students were in training. I hope that the present trend does not mean that we are to go from one extreme to the other. It would be appropriate if some policy for entry into the profession could be devised now; but I know that it is not an easy thing to do.



Work on the main structure of the new terminal building and control tower at Renfrew Airport will soon be completed. It is hoped that the new buildings will be ready for visitors flying to Glasgow for the Scottish Industries Exhibition in September.



B.I.F. Design Centre, designed by Neville Conder, A.R.I.B.A., A.A.Dip.(Hons.), M.S.I.A. for the ColD. It will be situated in the centre of the Prefabricated Buildings section at Earls Court. The exhibition opens on May 3.



Last week the Modular Society visited the new County Technical College at Dartford, designed in the Kent County Architect's Department, Architect in charge, J. H. Garnham Wright. The elevations shown in the picture are clad in Holoplast and glass panels.

#### POPULAR CARRIAGE

This is the title of an exhibition of road and railway carriage design organized by the British Transport Commission which opens in the Shareholders (ah! for the good old days) Meeting Room at Euston Station to-day. It will include most of the models seen at the A.A. reception and many other things. I wonder whether we shall see drawings of the new sleeping car designed by the architect's department of B.R.

Travelling to and from the coast in the Brighton Belle last week-end I wondered about the future of Pullman Car design. Externally the train is handsome enough and with a few modifications it could be really first-class while maintaining its traditional appearance. Inside we still have Edwardian stuffy magnificence in the panelling and general finishes, the detailing is heavy and many things, like the table lamps and their plastic shades, are downright ugly. Judging by some of the old Pullman cars they last for ever and the Brighton Belle has many years of life yet. All the same, I hope that the Pullman Car Company will begin to move with the times in any new designs which it produces; and by move with the times I do not mean use acres of pink plastics panelling *vide* the bar on the Golden Arrow.

ABNER

## L.C.C. Duties of Valuer and Director of Housing

At the Council Meeting on April 13 the General Purposes Committee of the L.C.C. recommended, in connection with the reorganization of the Housing, and Valuation Departments, that standing orders 278 and 278a be amended to read as follows:—

### 278. Duties of the Valuer

The valuer shall—

(1) Perform all the duties of an estate agent in relation to property belonging to the Council (except as provided in the standing order relating to the duties of the director of housing), including the making of periodical inspections of all such property, whether or not he is entrusted with the management of such property.

(2) Be responsible for advice as to values, conduct of negotiations and purchase, hiring and sale in respect of all properties, including valuation and compensation questions arising in connection with town planning.

(3) Be responsible for negotiations regarding compensation and allowances in connection with action under the London County Council (Woolwich Subsidences) Act, 1950.

(4) Advise on, and prepare, estimate plans, estimates and books of reference and conduct negotiations in connection with schemes or proposed legislation affecting property.

(5) Advise as to suitable sites for the Council's purposes, and submit the necessary estimates.

(6) Be responsible for the letting or leasing and the management of (i) non-residential properties (including shops) not on housing estates; (ii) land on housing estates other than allotments and garden plots; and (iii) factories and other non-residential buildings on housing estates except those for purposes wholly connected with an estate.

(7) Be responsible for the letting or leasing of (i) shops on housing estates and (ii) residential properties not on housing estates normally let for periods exceeding one year.

(8) Lay down programmes (for the director of housing to carry out) for the demolition of properties and clearance of sites acquired for the various services of the Council, and be associated with the architect in his negotiations thereon with the local drainage authorities.

(9) Be responsible for assistance to commercial and other business occupiers required to vacate their premises and for arrangements with public utility undertakings in regard to their mains and apparatus.

(10) Be responsible for the letting or leasing of the workshops at the Council's lodging houses.

(11) Determine the rents of accommodation (other than that on housing estates) occupied by staff of the Council by virtue of their employment.

(12) Conduct investigations in consultation with the director of housing as to population, means and cost of transit, housing accommodation and displacements.

(13) Advise on applications for loans and grants under the Small Dwellings Acquisition Acts and the Housing Acts and act as Council's agent in respect of properties for which advances have been made.

(14) Advise, for insurance purposes, on the value of property being acquired or



Mr. R. J. Allerton, F.R.I.C.S., Director of Housing to the L.C.C.

taken on lease by the Council, properties for which the Council has made loans or grants under the Small Dwellings Acquisition Acts and the Housing Acts, surplus properties, and other properties in his charge.

(15) Advise on questions of local taxation as it affects property and other interests, and deal with all questions of local assessment and rating, including the examination and certification for payment of demands for rents, rates, taxes, tithe and rent-charges on the Council's properties, and water rates and charges except in respect of the education service.

(16) Keep a register of the Council's property and records of ownership of land in London and of land development.

(17) Be responsible for the care and maintenance of all properties acquired for occupation by any service of the Council pending such occupation, either complete or partial, or the commencement of any necessary building or adaptation works preparatory to such occupation.

### 278a. Duties of the Director of Housing

The director of housing shall—

(1) Advise on all housing matters.

(2) Be responsible for the letting or leasing, management, collection of rents maintenance and repair of (i) all properties on housing estates other than shops, factories and other non-residential buildings used for purposes not wholly connected with an estate; and (ii) all residential properties not on housing estates and normally let for periods not exceeding one year.

(3) Be responsible for day-to-day management, maintenance and repair (but not the letting or leasing) of (i) shops on housing estates; and (ii) all residential properties not on housing estates and normally let for periods exceeding one year.

(4) Be responsible as agent for the valuer for (i) the maintenance of properties managed by the valuer, and (ii) the collection of rents in respect of those properties and of accommodation other than that on housing estates occupied by staff of the Council by virtue of their employment.

(5) Be responsible for the letting or

leasing of allotments and garden plots on housing estates.

(6) Comply with the programmes laid down by the valuer for the demolition of properties and clearance of sites acquired for the various services of the Council, including the rehousing of the residential occupants and the disposal of old materials.

(7) Be responsible for preparing schemes for the modernization of old dwellings which do not necessitate the preparation of working drawings and details.

(8) Maintain the buildings of the Council's lodging houses.

Mr. I. I. Ungar, F.R.I.C.S., A.M.T.P.I., has been appointed deputy director of housing at a salary of £2,100 p.a.

## 1954 Health Congress

The annual Health Congress organized by the Royal Sanitary Institute will take place at Scarborough from April 27 to 30.

The sessions devoted to Housing and Town Planning, Engineering and Architecture, Engineers and Surveyors and Sanitary Inspectors are as follows:—

### Section F. Housing and Town Planning (April 27)

*Presidential Address* by Sir William Holford, M.A., B.Arch., F.R.I.B.A., F.I.L.A., M.T.P.I., President, Town Planning Institute.

*Modern Science as Affecting Housing Technique*, by Arthur W. Kenyon, C.B.E., F.R.I.B.A., Dis.T.P., M.T.P.I.

*Planning for Housing*, by S. Lee Vincent, M.T.P.I., County Planning Officer, North Riding of Yorkshire.

### Section B. Engineering and Architecture (April 28)

*Presidential Address*, by J. H. Forshaw, C.B., M.C., M.A., B.Arch., F.R.I.B.A., M.T.P.I., Chief Architect and Housing Consultant, Ministry of Housing and Local Government, and Chief Architect, Ministry of Health.

*Existing Legislation Covering the Cost of Rural Sewerage and Water Supply and Connecting Regulations and Amendments Considered Desirable Thereto*, by K. E. M. Daniels, A.M.I.C.E., M.I.Mun.E., A.R.I.C.S., Engineer and Surveyor, Wimborne and Cranborne R.D.C.

*The Planning of a General Hospital; with particular reference to the new Alexandria Hospital, Dunbartonshire*, by J. L. Gleave, M.A., A.R.I.B.A., M.T.P.I.

### Conference 2. Engineers and Surveyors (April 29)

*Presidential Address*, by J. Paton Watson, C.B.E., M.I.C.E., M.I.Mun.E., President, Institution of Municipal Engineers, City Engineer, Plymouth.

*The Reconditioning of Housing Property*, by R. J. Allerton, F.R.I.C.S., A.M.I.Mun.E., F.I.Hsg., Director of Housing-Elect, London C.C.

*Investigation of Single-Stack Drainage for Multi-Storey Flats*, by A. F. E. Wise, M.Sc. (Tech.), Building Research Station (D.S.I.R.), and J. Croft, Chief Inspector, Public Health Department, London C.C.

## IN PARLIAMENT

### Property Values near Aerodromes

Lord Teviot directed the attention of the House of Lords to the loss in the value of properties contiguous to aerodromes, and asked for the appointment of a Royal Commission to investigate the whole subject, including the detrimental effects on the lives and activities of people living near aerodromes. He did not accept the statement that low-flying jet aircraft did not damage houses and quoted from a comment by the Minister of Transport on Nov. 5 last year at an aerodrome that "It would be perfectly fair to say that there is no scientific evidence that damage has been caused; but, as an ordinary citizen, I believe that some damage is caused in this case—that there is accelerated deterioration of houses that are already deteriorating." On the question of compensation, he suggested from personal experience that not a great many people should receive a great deal. At some aerodromes there would be no question of compensation, but there were others where people living contiguous to them were badly affected and should be compensated. It was impossible to sell property in the condition he complained of.

Lord Silkin, who said he was acting professionally for people who were suffering from aerodrome noise, commented that the countryside seemed to be the last place nowadays in which to seek peace and quiet; it had to be sought in the centre of a large town, like Bloomsbury Sq. Normal flying had become part of the ordinary conditions of life. It was the abnormal aspect that was the real problem. Testing jet aircraft, on the ground and in the air, created intolerable nuisance. Property had become unsaleable, and small owners found all their savings gone. He looked forward to the time when there would be virtually silent aircraft engines. Meanwhile there ought to be a remedy, and he suggested that there should be an automatic right for people suffering from loss of the quiet enjoyment of their property, or depreciation in its value, to go to some tribunal and secure compensation for their loss. In extreme cases, those committing the nuisance might be required to acquire at market prices the property affected.

The Earl of Selkirk, speaking for the Government, said a great deal of effort was being made to test how the nuisance of sound could be reduced. There was inevitably a conflict between individual interests and the interest of the community. At present defence requirements were the dominating factor. With one exception, virtually no new aerodromes were being built; existing ones were being adapted to modern requirements, and that meant severe restriction on what could be

done. In testing aircraft great care was being taken to cut down noise to the minimum. At London Airport a wall had been built to baffle the noise of aircraft in the neighbourhood. Hangars were sited so that testing took place on the side farthest from houses. An experimental device for detuning jet engines was giving encouraging results. Efforts were being made to use portable screens possessing sound-damping qualities.

The effect on property values of aerodrome development was complex. There was an appreciation in value of some property. The Middlesex County Council had received a number of applications for permission to erect new business premises—hotels, garages, cafés, and so on—near London Airport. On the other hand some residential property would tend to depreciate, but there was no evidence to show general depreciation. There was always a risk in ownership. The Government could not accept a general proposition, the effect of which would be that for any development that might take place, whether public or private, the developers might find themselves liable to pay compensation to somebody who could show some loss in value in the immediate vicinity. The Departments concerned were very much alive to their responsibilities, and would do their best to ensure that every practicable step was taken to prevent, or at least to modify, the inconvenience to the public (April 7).

### Scottish Controversy

Mr. T. Fraser asked the Secretary of State for Scotland if he had considered representations from the Scottish National Building Trades' Federation and the Federation of Civil Engineering Contractors (Scottish Section) that the amount of work undertaken by the Direct Labour Organisation of the Scottish Special Housing Association should be reduced, and what reply had been given. Mr. Hoy asked why instructions had been given to the Scottish Special Housing Association to reduce the number of houses built by direct labour. Commander Galbraith, the Under Secretary, said that the Secretary of State had considered various representations from the two federations that the amount of work done by the association's Direct Labour Organisation should be reduced. The federations had been told that the Secretary of State, being satisfied that the Direct Labour Organisation was of sufficient strength to serve its present purpose, did not intend to expand it any further. Answering further questions, Commander Galbraith said that the federations had not been told that the amount of work to be done by the Direct Labour Organisation would be reduced. The Scottish Office considered that, as the organization

was already servicing practically all the sites for the association's houses, and building about one-fifth, that was sufficient for the present.

Commander Galbraith informed Mr. Hoy that in the year ended March 31, 1953, the Direct Labour Organisation completed 1,366 houses, and in the following year 1,185 houses. The number built next year would be above that completed last year.

Mr. McInnes asked what reply had been sent to a request from the two federations for permission to examine the accounts of the Scottish Special Housing Association, with a view to satisfying themselves about the association's claims in respect of the economies effected in site servicing by the Direct Labour Organisation. Commander Galbraith answered that the federations had been told that the Direct Labour Organisation competed against rates agreed by the Scottish Office which the Secretary of State was satisfied reflected current market rates. He could not of course permit the federations to examine the association's records to ascertain the detailed basis of the Direct Labour Organisation's estimates and the results. Mr. McInnes said it should be sufficient to satisfy contractors that the association operated on a competitive basis that its prices were compared by the Scottish Office with competitive tenders, and its books were examined by the Comptroller and Auditor-General.

Mr. T. Fraser was also told by Commander Galbraith that the federations had been told that in the Government's view the Direct Labour Organisation's activities did not materially affect the volume of work available to private contractors in the building and civil engineering industry.

Mr. Fraser described it as an impertinence on the part of the federations to seek to influence the Government to curtail the activities of the Direct Labour Organisation. Commander Galbraith expanded his reply by pointing out that of about 40,000 houses being built in Scotland only 5,000 were being built by the association. In addition, there was all the other civil engineering work to be contracted for. In these circumstances the Government did not consider that there was interference. (April 6.)

### Surface Mining

The Minister of Fuel and Power said in answer to Mr. A. Roberts that as far as could be foreseen it would remain necessary for some years to maintain opencast coal production at a high level. The Government fully appreciated the inconvenience caused, and land would be requisitioned for this purpose only so long as was essential in the national interest. He gave an assurance that the fullest enquiries would be made before land was requisitioned. Mr. P. Noel-Baker asked that something should be done to restore land taken for sand, gravel and other purposes. (April 5.)

**HOUSING. MARK HALL.****HARLOW NEW TOWN**

architects : YORKE, ROSENBERG &amp; MARDALL

associate architect : T. R. EVANS. assistant architect : PENELOPE WHITING

**I**N this scheme 292 dwellings have been planned on a site of 19.5 acres at a density of approximately 15 dwellings to the acre.

The boundaries of the site are fixed by natural features, woods and spinney to the south and north, the site for a primary school on the west and recreation grounds on the east. The site slopes gently upwards to the south but has no other natural feature.

Within this area, the architects have planned a self-contained housing group; shopping areas are in adjacent groups to the south-west and north-east. Apart from dwellings there are a tenants' meeting room, transformer station, a letterbox and telephone booth. Two of the houses are County Police cottages.

Except for boundaries, the only limiting factor in the layout was the spine road linking area 11 to area 16. Its position was fixed to permit the most economical development of the land to the east and south, the determining factor being the permissible carry for dust bins and fire hoses.

In order to avoid the kind of monotony that one gets in the normal housing estate, where two-storey dwellings are planned in lines fronting on all the access roads, dwellings here have been planned, in the main, at right angles to the roads and to the site boundaries, so that there are views between the houses into the open land and woods which bound the site. Access to the houses is by footpath or mews-type lanes so that front and back doors are on one side of the house and the garden side is quite private.

Dwelling types may be divided broadly into low rental houses, flats and houses for higher income groups, and again into one bedroom and two bedroom flats, and two, three, four and five bedroom houses. Houses are two and three storey and the flats are four storey without lifts. There are altogether eleven plan types excluding the Police cottages. East and west facing mews-type houses have different plans so that the east facing types have through living rooms. The flats have been planned on the high ground to get the maximum visual effect from their extra height in contrast to the two-storey units. They are placed round a green on the spine road where the woodland penetrates the site. There is no other public open space within the site excepting a small semi-formal square in the north-west corner among the three-storey houses. The three-storey houses have been planned on the lower ground to avoid a falling away of the buildings at this extremity of the site.

**Materials**

Walls : Cavity brickwork in yellow London stocks and

flettons. Some surfaces of the flats are finished with Tyrolean render. Roofs: Timber construction covered with Turnall Trafford tiles on building paper. Single pitch roofing, generally rising towards the south, one rainwater pipe to two dwellings. Flats have double pitch at 10 deg. with three layer built up mineral finish roofing felt. All single storey buildings, sheds, garages, etc, have an integral dark brown coloured Trafford tile. Floors : Ground floor, concrete with asbestos resin tiles, some quarry tiles in halls. First floor, close boarding on timber joists. Partition walls : Some load bearing partition walls are 4½ in fletton brickwork, some 3 in. Broad-Acheson clinker blocks, non-load bearing are B.S. clinker block. Windows : Generally on the garden side where large panes were required sliding wood windows are used and to smaller rooms on the entrance side metal casements. Paths : Garden paths are concrete *in situ* with brushed surface to expose a pea gravel aggregate, divided into 5ft. bays. Insulation : ½ in fibreboard ceiling to top floors, painted direct. Hollow party walls. Screed on concrete floors in flats laid on 1 in glass silk quilt. Roofs to flats have woodwool under the felt finish and fibreboard ceilings to the top floors.

**Finishes**

Prime, two undercoats and one finishing coat to external and internal wood and metal work. Slate hoods with benched weathering built into the brickwork above doorways. 1 in slate chimney cappings. Plaster internally : Lime plaster, 1 : 1 : 6 cement, lime, sand undercoat and finishing coat of 1 : 4 : 4 Sirapite, lime, sand. Gypsum plaster, undercoat 1 : 1 : 6 cement, lime, sand, finishing coat neat Sirapite (anhydrous), finished with one coat Screetons' flat oil paint. Plaster board lath with skim coat of Sirapite to ground floor ceilings. Exposed concrete generally is left from the shuttering and painted direct. Window sills grey or buff quarry tile or hardwood.

**Services**

In order to keep planning free and unrelated to the water heating system back boilers have been avoided and gas or electric water heaters have been used in all but the largest houses. Bathrooms have been planned above kitchens and hot water runs are short.

Planting has been very carefully related to the buildings in a scheme prepared by Miss Sylvia Crowe, F.I.L.A. So far as compatible with economy in Estate Management, trees in grass have been used in preference to shrubs in earth beds.



Looking East down the spine road, the tenants Common Room is on the right, the block of 16 one-bedroom flats on the left, and the block of 24 two-bedroom flats beyond it. The terraces of two- and three-bedroom B-type houses are seen in the centre.



SITE LAYOUT



## Housing, Harlow New Town

On the left are 5-bedroom E-type houses; the tenants Common Room in the centre and Standard Two F-type houses on the right.

Standard Two F-type houses in a mews, 3-bedroom except the end houses which have a garage and four bedrooms.



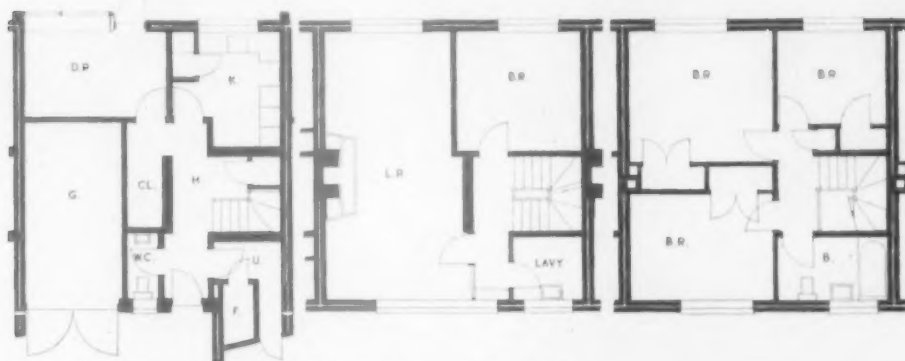
Standard Two houses G-type looking down the mews. Four bedrooms with garage on the ground floor.



### Schedule of dwelling areas

Standard One				
1 bedroom, flats	32 dwellings	506 sq. ft.	excluding balconies, sheds, etc.	
2 bedroom, flats	24	741	"	"
2 bedroom houses	33	792	"	"
2 " "	28	808	"	"
3 " "	72	913	"	"
4 " "	24	1,247	"	"
5 " "	10	1,412	"	"
Standard Two				
3 bedroom houses	15	1,080	"	"
3 bedroom houses (with study and garage)	5	1,320	"	"
3 bedroom houses	11	1,104	"	"
3 bedroom houses (with study and garage)	6	1,344	"	"
4 bedroom houses	20	1,500	"	"
4 " "	10	1,562	"	"
		2,90		

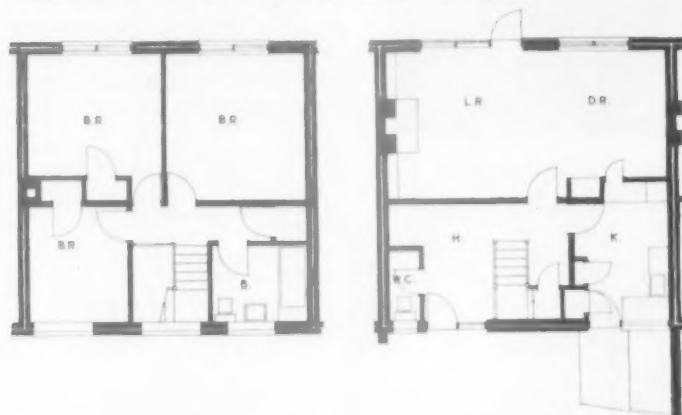
Area of site 19.5 acres. Density 15 dwellings per acre.  
Habitable room per acre 59.6 (dining-kitchen not included).



TYPICAL G TYPE THREE-STOREY HOUSES



TYPICAL F TYPE TWO-STOREY HOUSES



TYPICAL F TYPE WITH THREE BEDROOMS

STANDARD TWO PLANS  
SCALE: 1/16" = 14 FT

TYPICAL E TYPE

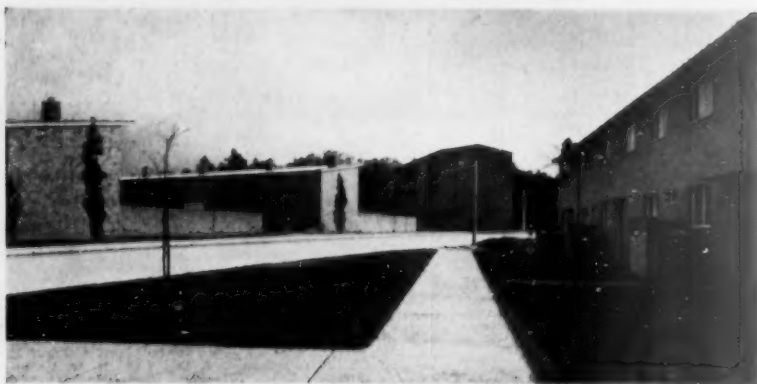


G

General Contractor:

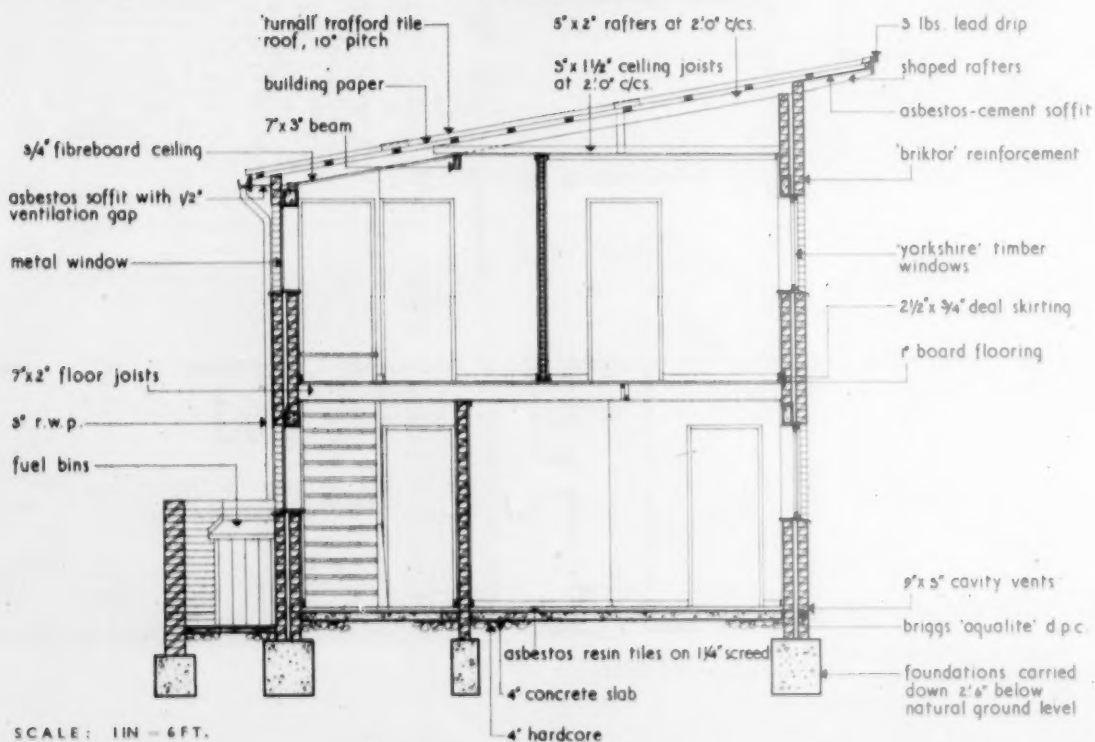
George Wimpey &amp; Co., Ltd.

Airbricks: J. W. Rains & Co., Ltd. Balcony Railings: Richard Quinnell & Co. Balcony Slats: Linden Doors, Ltd. Balcony Wirework Panels: Clark Hunt & Co., Ltd. Boilers: Ideal Boilers & Radiators, Ltd. Bricks: Eastwoods, Ltd., The Cement Marketing Co., Ltd., The London Brick Co., Ltd., Ashford & Nascott. Chimney Capings: The Bow Slate & Enamel Co., Ltd. Chimney Pots, Flue Liners: Erith & Co., Ltd. Consumer Units: Mantel Metalworkers, Ltd. Damp-proof Coursing: Wm. Briggs & Sons, Ltd., Felt & Dampcourses Ltd. Doors: J. Gliksten & Son, Ltd. Electric Water Heaters: Simplex Electric Co., Ltd. Electrical Installation: Eastern Electricity Board. Fibreboard: The Merchant Trading Co., Ltd. Fireplaces: Bratt Colbran & Co., Ltd., Buxendale & Son, Ltd., R. W. Cross-thwaite, Ltd. Flooring: Korkoid Decorative Floors, Ltd. Garage Doors: Acrow (Engineers), Ltd. Gas Water Heaters: Arcor Gas Water Heaters, Ltd. Gas Installation: Eastern Gas Board. Ironmongery: A. G. Roberts & Co., Ltd. Kitchen Fittings: Rippers, Ltd. Paints: Imperial Chemical Industries, Ltd., Craig & Rose, Ltd. Partition Blocks: Broad & Co., Ltd. Prestressed Concrete Floors: Concrete, Ltd. Roofing: D. Anderson & Son, Ltd. (3-layer felt); E. & H. Smith (London), Ltd. (asbestos cement). Steel Angle and Flat: Hills (West Bromwich), Ltd. Windows: Williams & Williams, Ltd. (Metal), Rippers, Ltd. (Wood).

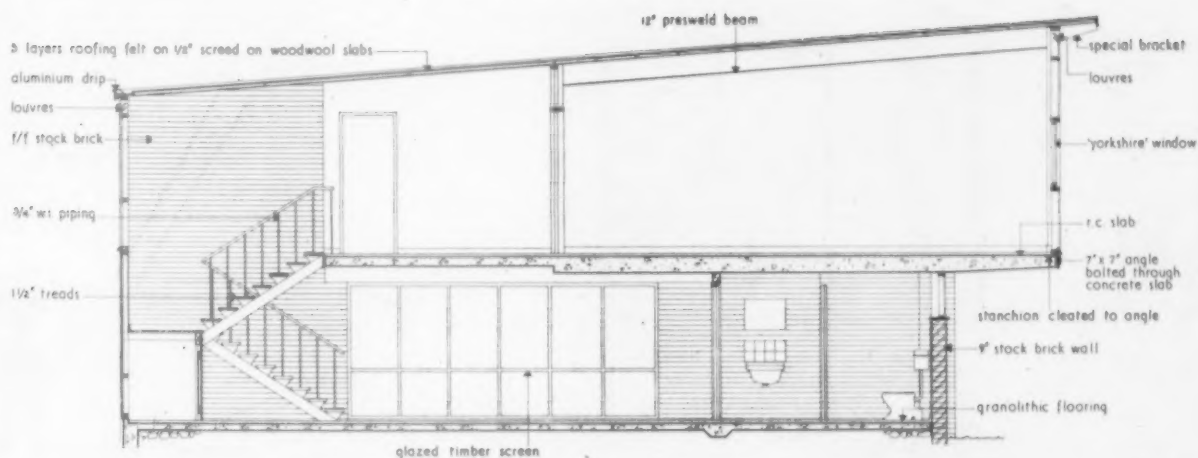


Looking North down the spine road with 2- and 3-bedroom Standard One B-type houses on each side.

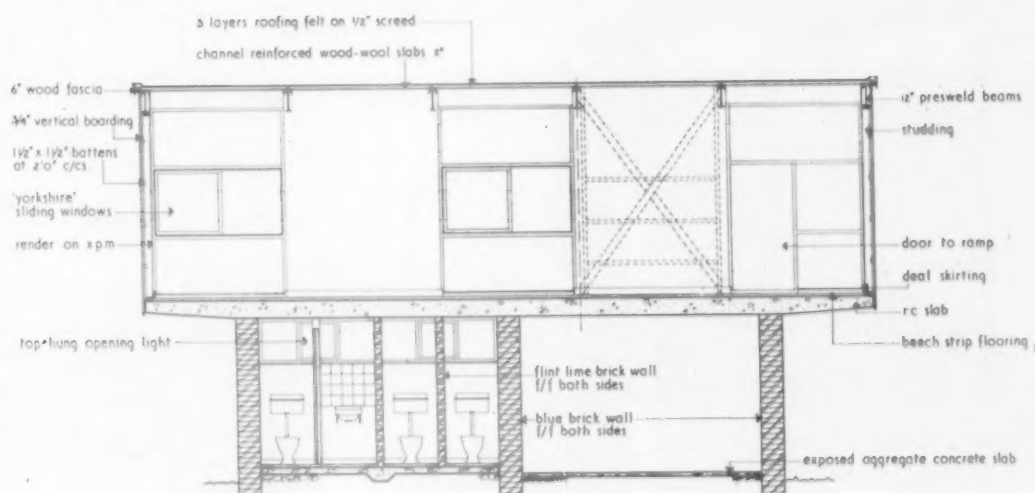
Looking South up the spine road, 2- and 3-bedroom B-type houses on left and right with a block of 16 four-storey 1-bedroom flats in the centre of the picture.



SCALE: 1 IN = 6 FT.



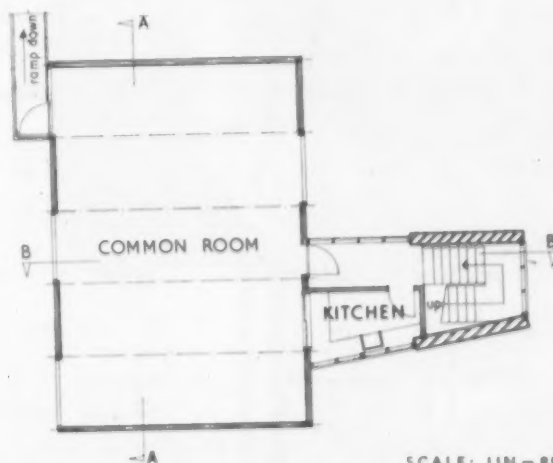
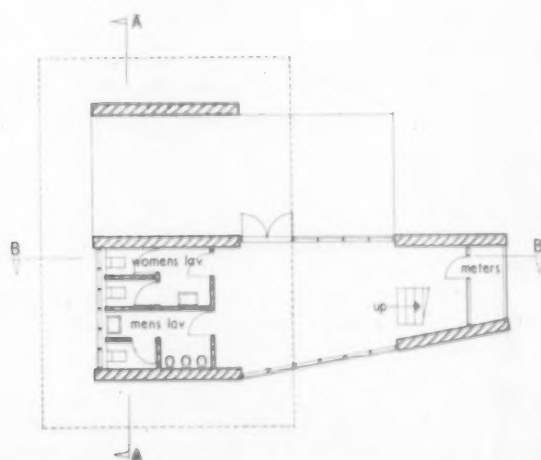
B-B



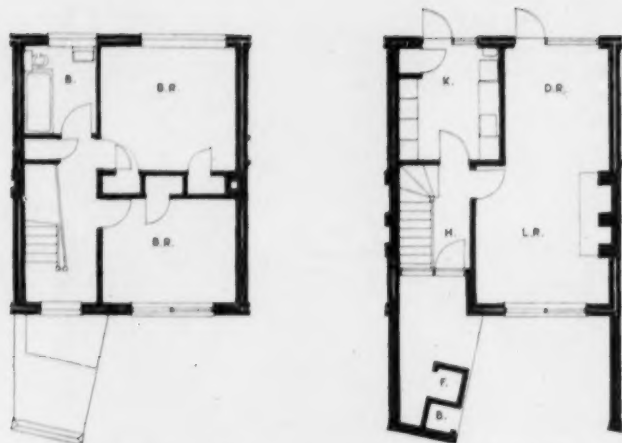
A-A

## Housing, Harlow New Town

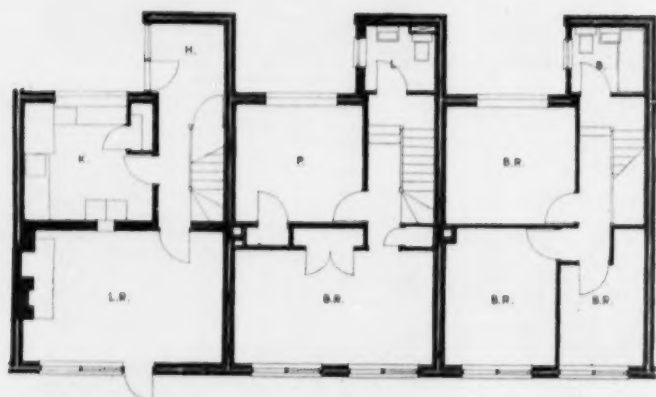
Opposite, typical section through house. This page, Common Room plans and sections.



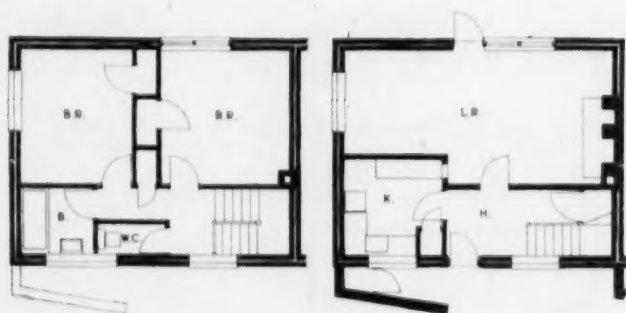
SCALE: 1 IN = 8 FT



TYPICAL C TYPE. NARROW FRONTAGE



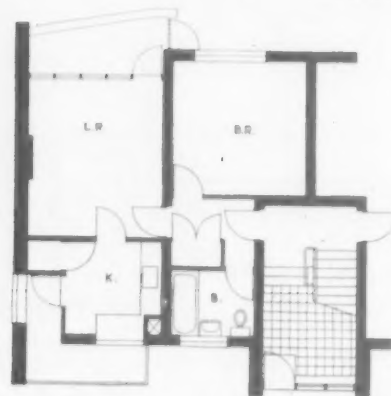
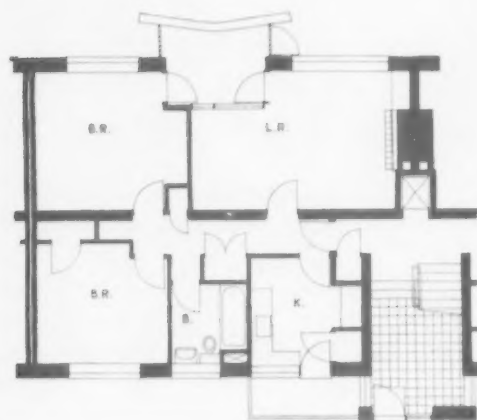
TYPICAL D TYPE. THREE-STOREY



TYPICAL B TYPE. TWO AND THREE BEDROOMS



## Housing, Harlow New Town



TYPICAL ONE-BEDROOM FLAT

(Top) TWO-BEDROOM FLAT

STANDARD ONE PLANS  
SCALE 1/16" = 1/4"

Pictured on facing page :

2. Standard One 4-bedroom D type houses. Houses on the left seen from their access side.

3. Some more 2-bedroom C type houses on left and three-storey, Standard One, 4-bedroom D type houses in the centre, garden side.



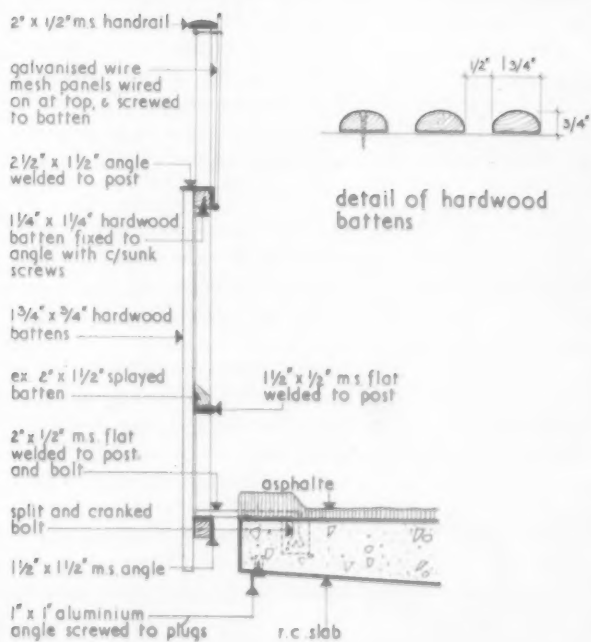
1. Standard One houses C-type with two bedrooms, a narrow frontage plan.



2



3



4

4. Two- and three-bedroom B-type houses with a block of eight 1-bedroom flats in the centre.

Typical balcony, front. Scale: 1 in = 1 ft



*From the infants' play pitch to North-West of the school*

## LITTLE FURZE COUNTY PRIMARY SCHOOL, OXHEY for the Hertfordshire County Council

architects: GOLLINS, MELVIN, WARD & PARTNERS

in association with C. H. ASLIN, C.B.E., County Architect

assistant in charge: B. J. MAYES

**T**HE site is approximately square and falls steeply down to the access road which forms the north boundary at a slope of approximately 1 in 7. The three other sides are bounded by thick belts of trees and the only distant view is over L.C.C. housing on the falling land lying to the north.

### **Problem:**

To plan an infants' school for 240 and a juniors' school for 360 children; each, though sharing a common kitchen, to be entirely separate for all administration and teaching. Originally the children were to use one large dining room but as the Ministry of Education standards were amended shortly after the sketch scheme plans were approved the dining room was reduced in size for use by the juniors only and the kitchen serveries replanned so that the infants' assembly hall could be used for their dining.

### **Solution:**

While the steep slope and narrow width of the site and the severely restricted views to the south prevented the development of the more orthodox plan with the schools side by side it allowed them to be planned as a part two-storeyed building with one school largely above the other. To avoid stairs for the infants their school has been planned in its entirety on the ground floor with no change of level at all—an arrangement which also allows easy access to the playground and sand pits. The juniors' school which has three teaching spaces more than the infants is also entered at ground level but on a contour line some 10ft higher than the infants' entrance.

Both schools have their main entrance, assembly halls

and administration in single storey structures at ground level as are the infants six teaching spaces and three teaching spaces for the juniors. The six remaining junior teaching spaces, together with their cloaks and lavatories, are on the first floor immediately above the similar accommodation in the infants' school but at the same level as the rest of the juniors' school.

The juniors' dining room is on the ground floor adjoining the common kitchen and is directly approached by a staircase from the upper level teaching spaces of the juniors' school. The infants' assembly hall serves also as their dining space and has serving hatches to the kitchen.

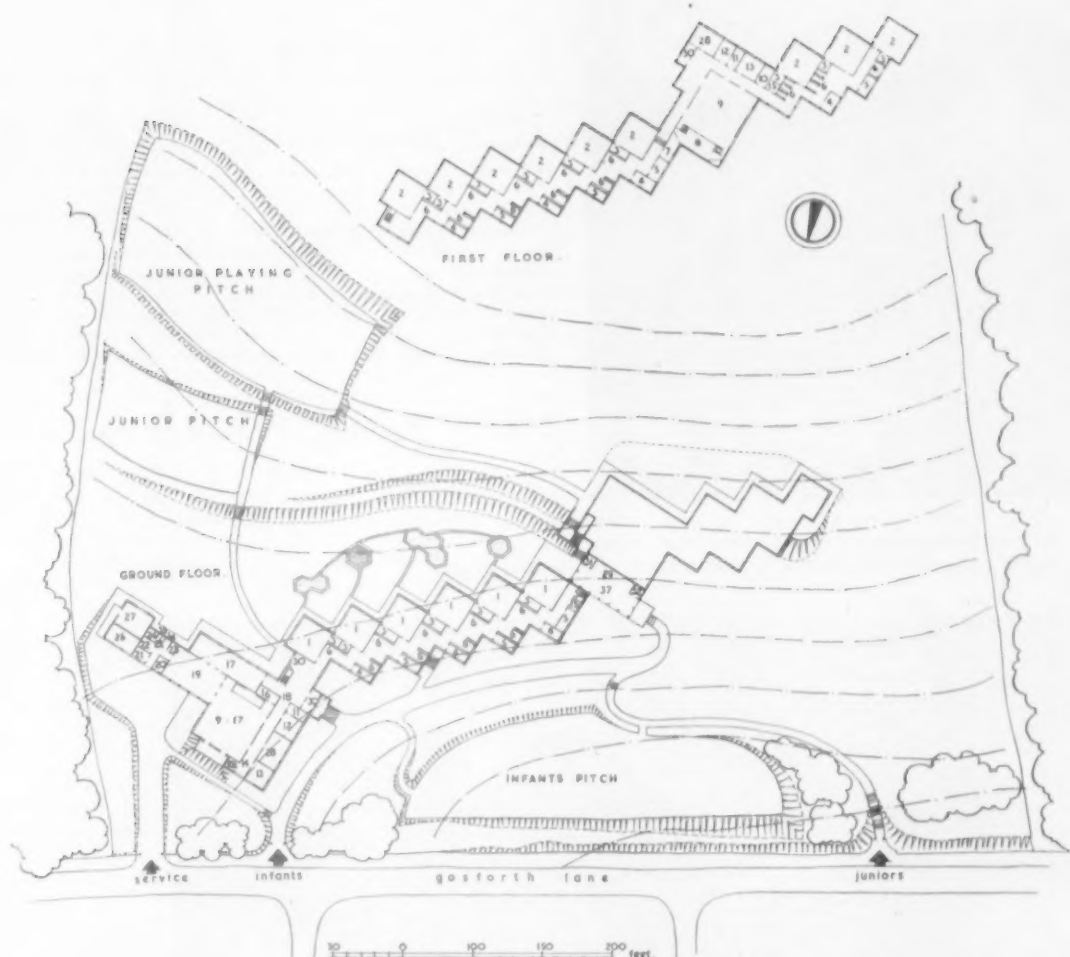
The infants' and juniors' circulation is entirely separate; the main entrance to the infants' school faces North-West over their playground and Gosforth Lane and the juniors' entrance, which is approached by the covered way under their assembly hall, faces South-East.

### **Construction:**

Both schools are planned on the 8ft 3in module and the steel frame as well as the floor and roof units, wall cladding units and metal windows were all supplied by Messrs. Hills (West Bromwich) Ltd.

The steep slope of the site and the clay nature of the subsoil did not allow the foundations to be the edge beam construction normally chosen for Hills' frame schools and under most of the stanchions short bore piles between 13in and 16in in diameter and approximately 10ft deep have been used.

Work started on the school in October, 1950 and the infants' school was completed and in use for the summer term 1952; the juniors' school was occupied a term later.



Entrance to covered way with assembly hall over. Infants (ground floor) and juniors (first floor), teaching spaces to left.

#### KEY.

1. Infants' Teaching space. 2. Juniors' Teaching space. 3. Stores.
4. Boys' Lavatory. 5. Girls' Lavatory.
6. Children's cloaks. 7. Stage props.
8. Stage. 9. Assembly Hall. 10. Staff Lavatory. 11. Secretary.
12. Head. 13. Medical Inspection. 14. Waiting space. 15. Cleaners.
16. Chair store. 17. Dining Hall. 18. Entrance Hall. 19. Kitchen.
20. Veg. store. 21. Larder. 22. Dry store. 23. Equipment. 24. Kitchen staffroom.
25. Kitchen staff lavatories. 26. Fuel store. 27. Boilers.
28. Staffroom. 29. Bicycles. 30. Lobbies.
31. Games store. 32. Tool store. 33. Bins. 34. Kitchen office.
35. Ground staff lavatories. 36. Meter room. 37. Covered way.



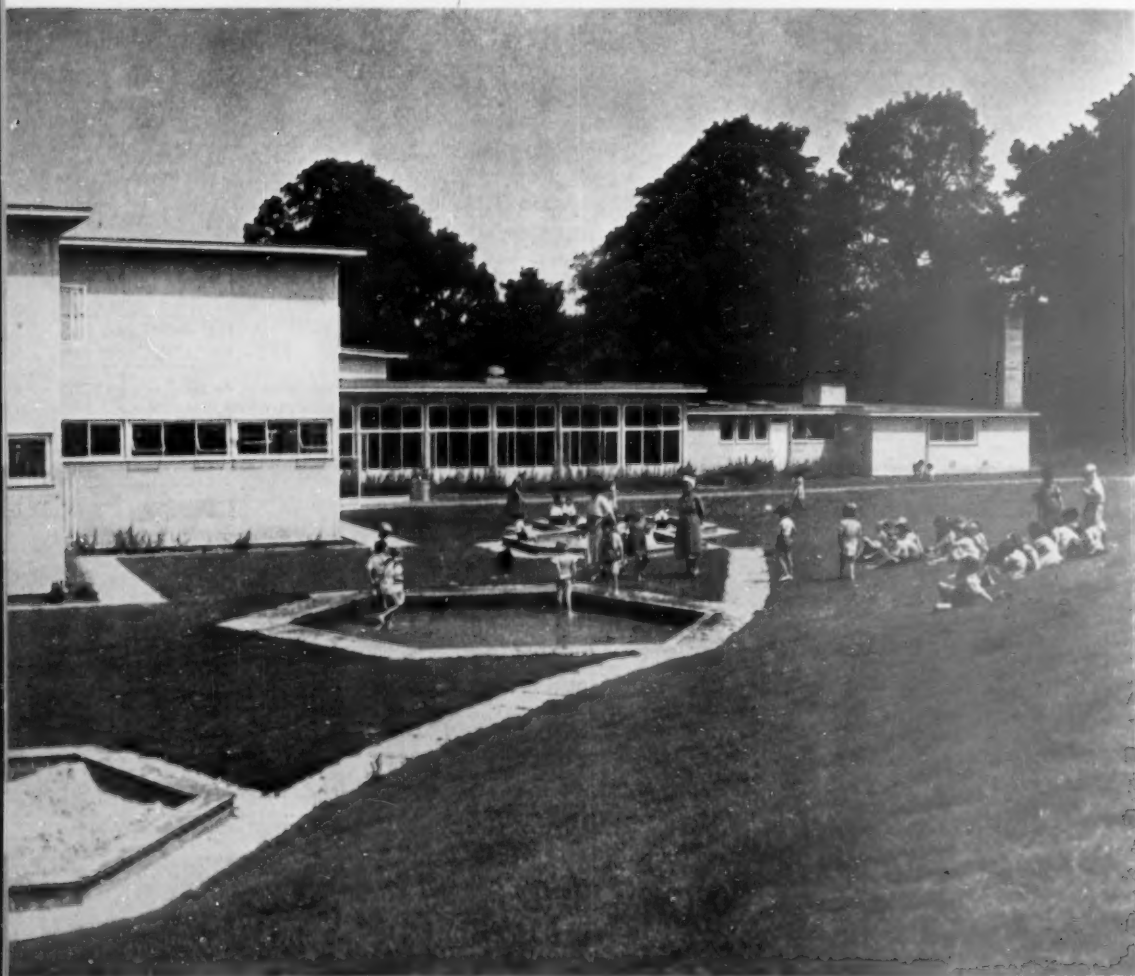


General contractor : Y. J. Lovell & Sons, Ltd.

Asphalte roofing:	Asphaltic (London), Ltd.
Balustrades and handrailing:	Grundy Arnatt, Ltd.
Electrical Installation:	E. Wight & Co.
Fibrous plaster:	Claridges (Putney), Ltd.
Groundworks:	E. Doe & Sons.
Heating & Hotwater Installation:	Weatherfoil Heating Systems, Ltd.
Sanitary fittings:	John Bolding & Son, Ltd.
Steel frame, floor and roof units, wall cladding units, metal windows and rooflights, internal screens and entrance gates:	Hills (West Bromwich), Ltd.
Thermoplastic tile and woodblock flooring:	Hollis Bros., Ltd.

### Little Furze Primary School

Infants' entrance. Administration and staff rooms to left. Below, children playing in the pools and sand pits to south of the infants' teaching spaces.



## POINTS FROM PAPERS

## ELECTRICAL FLOOR WARMING

Extracts from a paper read on Wednesday, April 7, at the 1954 E.D.A. Conference by J. W. Moule, B.Sc.(Eng.), A.M.I.E.E., Chief Commercial Officer, South-East Scotland Electricity Board

**T**HIS Paper has been prepared for the help of Area Boards' commercial staffs in the development of the "off peak" electrical floor-warming load. It is not written for the heating specialist, and the author asks for the forbearance of any heating engineer who may feel that certain parts of the Paper are of an elementary character. The principles and electrical application of floor warming are not well known among the generality of commercial engineers, and the Paper deals with some fundamental heating considerations before going on to give details of experience in the development of electrical floor warming in South-East Scotland.

## The Design of an Installation

Before we can consider the details of an electrically warmed floor, it is necessary to refer to the calculation of a building's heat requirements.

A space-heating installation has to be designed to supply sufficient heat to the building to maintain adequate comfort during severe wintry weather. The first step in the design of a heating installation is therefore to calculate the total heat loss of the building when that building is subjected to certain external conditions.

The heat loss of a building can be divided into two parts:—

- (1) The heat that escapes by conduction from the inside to the outside through the windows, walls, ceiling, and floor; and
- (2) The heat carried away by warm air which leaves the building in various ways and is replaced by colder air from outside.

It is necessary to calculate the heat loss of each individual room, corridor and other internal space, and we find it convenient to do this on a sheet of paper in the manner described. Each internal surface of the room is taken in turn and a calculation is made of the amount of heat that will escape through that surface under certain specified internal and external conditions. The "U" value is the coefficient of heat transmission and, for various types of structure, can be obtained from tables published by the Institution of Heating and Ventilating Engineers. Low "U" value reflects good heat insulation and is particularly desirable for parts in contact with the outside air. The best practicable heat insulation is desirable in all buildings, but it is especially important for floor-heated buildings. It might be noted in passing that a plain 9in brick wall with  $\frac{1}{2}$ in plaster inside has a "U" value of about 0.46, whereas an unventilated cavity brick wall with glass fibre in the cavity has the much lower "U" value of 0.08.

Single windows of glass usually have a "U" value as high as 1.0.

The loss of heat by the escape of warm air is calculated from the number of air changes required each hour. For schools, industrial premises, etc., various standards are laid down by the authorities, and the heat loss due to air change can be readily calculated by multiplying the volume of air displaced every hour by the temperature difference and then by 0.019, the specific heat of air. It is often mistakenly assumed that ventilation is required solely to prevent the air becoming vitiated to such an extent that the oxygen content is too low. Discomfort due to heat, body odours, etc., generally arise long before this point is reached, and the number of air changes is fixed therefore on these grounds rather than that of a sufficiency of oxygen.

The heat loss of the building is the aggregate of the heat losses of the individual rooms, spaces, etc., taken from the various sheets.

Having calculated the total heat loss of the building in

B.Th.U.'s per hour under severe weather conditions, it is next necessary to determine the kilowatt loading required to meet that heat loss. If an instantaneous form of heating were being installed, it would be necessary to divide the heat loss by 3,412 in order to obtain the required electrical loading. Due to the heat storage properties of a warmed floor, the kilowatt loading can be calculated on average wintry conditions instead of the coldest conditions, although in so doing regard must be had to the possibility of prolonged cold spells. Electrical floor warming is being developed on account of its ability to operate with a restricted electricity supply, and the loading of the installation therefore must be such that the electrical input during the period the supply is available adds sufficient heat to the floor to keep the building warm throughout the day.

The minimum number of hours per day during which a supply is necessary depends upon the thermal storage properties of the floor. With large buildings, the floor is generally sufficiently thick to permit a cut-off period from 7 a.m. to 7 p.m. It is therefore our standard practice to adopt this period when considering the heating of large buildings, although the kilowatt loading of the heating system, and consequently the capital cost, is increased as compared with the position if a mid-day boost were permitted.

It is likely we shall have second thoughts on this, but in developing floor heating, it has been reassuring to know that if the degree of warmth proved insufficient, we could fall back on a mid-day boost. Experience has shown, however, that with only a night-time supply, there is no difficulty in maintaining sufficient heat throughout the day even in the coldest of weather.

In the case of lighter buildings, such as ordinary dwellings, solid floors are not so heavy and a mid-day boost is desirable. The question of tariffs is referred to in a later section of the Paper, and my view is that some inducement should be given to encourage the development of private house "off peak" floor heating by offering an "off peak" tariff with a mid-day boost. One Area Board already does this.

There are special circumstances in which a particularly high temperature is required, for example, in operating theatres, doctors' examination rooms, etc., and it is sometimes necessary to supplement the floor heating by installing heating panels in the wall. The area of a wall panel is necessarily limited, and the wall surface temperature is usually about 100 deg F. As a wall panel cannot have the storage properties of a floor, a mid-day boost is almost essential.

Having settled the number of hours per day that the supply will be available and the kilowatt loading of the installation, the detailed design of the floor-heating installation can proceed, the loading in each individual room or space, so far as possible, matching the heat loss, so as to give the specified internal comfort conditions.

It is also necessary to estimate the total electricity consumption for a full heating season and this requires a knowledge of the average winter temperatures experienced in the district in which the building is being erected. Average temperatures for various parts of Great Britain are given in various meteorological publications of H.M. Stationery Office, but it should be remembered that conditions can vary considerably in a short distance. In hilly districts particularly, local information on weather conditions is essential if a reliable estimate is to be made.

The most satisfactory method, and one which is particularly valuable later on in checking actual consumption, is to take average temperatures week by week throughout the

## Electrical Floor Warming

heating season. An estimate of the electricity consumption during each week is obtained by dividing the total heat loss of the building by the average temperature rise under severe winter conditions. This gives a figure of heat loss per degree difference in temperature. The average temperature rise required during the week in question is also calculated and this is multiplied by the heat loss per degree difference in temperature and by 168, the number of hours in a week. The total B.Th.U.'s thus obtained are divided by 3,412 to obtain the electrical unit consumption. It is not suggested that this method is wholly accurate, but it gives a result sufficiently close for practical purposes.

The exposure of a building also has to be taken into consideration, as a building subject to the cooling effect of high winds loses heat more rapidly than a more sheltered building.

### Installation of Floor-warming Equipment

It seems that, to prevent discomfort to the feet, the floor temperature should not exceed 73 deg F. In order to provide adequate warmth in very cold weather, it is necessary to ensure that the whole of the floor surface is raised to this temperature. J. S. A. Primrose, a Glasgow consulting engineer, hit upon the idea of running the heating wires in conduit and covering the conduit with wire netting before the top screed was laid. The wire netting was raised to a uniform temperature by the warm conduit and this in turn resulted in a uniform transmission of heat through the top screed to the surface of the floor, giving a uniform floor temperature. This idea is the basis of the Panelec system of floor warming which is now becoming extensively used.

Probably the best way of explaining details of the Panelec system is by reference to a number of photographs of actual installations in South East Scotland. The heating equipment is installed just below a top screed about 2½ in deep. When the floor is ready to receive the top screed, the floor-warming equipment is laid out by the electrical contractors. It consists of "D" shaped metal housings placed in parallel lines across the floor with the flat side uppermost. The distance between the housing is determined by the electrical loading required and is generally between 6 in and 12 in. The housings terminate in troughs at two opposite ends of the room and the height of the troughs is such that when the covers are in position they will be flush with the final floor surface. The troughs serve to give permanent access to the channels, to permit the heating cables to be installed, and to carry the electrical wiring and connections to the heating cables. A cross-section through the floor of one of the Board's buildings heated by floor warming is given in Figure 1. This diagram also shows the temperature distribution through the floor. Figure 2 is a photograph of this installation in course of construction. The housing is usually supplied in lengths up to 15 feet and can be readily jointed by the sleeves clearly shown in the photograph. After the housing is in position, ½ in expanded metal or some other similar material is laid to cover the whole area and this is fixed to the top and flat side of the housing by fasteners already provided. The top screed can now be laid, care being taken by the builders to work the concrete around the expanded metal to prevent formation of air pockets. The illustration shows the work in progress and note should be taken of the provision of sleeper paths for the cement barrows to avoid damage to the electrical equipment.

Figure 3 is a close-up photograph of the top of a trough. The ends of the housing can be seen just protruding into the trough with the heating cable either passing from one housing into the next or terminating in a joint box. The joint box in the centre of the photograph is open and the heating cable and the lead-covered supply cable have been inserted and are ready for jointing. The box on the right-hand side is completed and ready to have its cover screwed into position.

The trough register shown in Figure 3 is of steel and supplied by the manufacturers. The trough is fabricated on site in the manner shown in Figure 4. In this installation the troughing was formed around a wooden box. This photo-

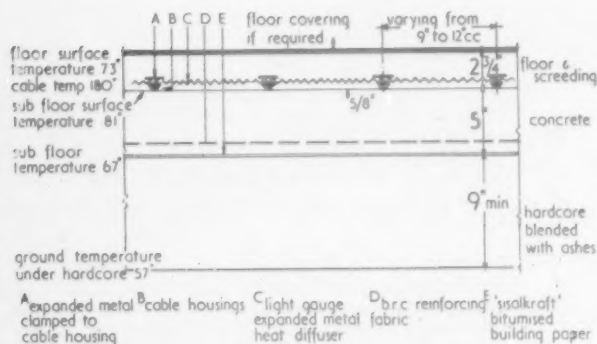


Fig. 1. Typical section through floor with Panelec embedded low temperature electric floor heating.



Fig. 2. Installation of Panelec floor-warming equipment.

graph also illustrates a method of earthing the housing by means of an aluminium strap laid adjacent to and terminating in the housing.

Figure 5 shows a method of construction adopted in a garage where the floor is likely to be covered with water. In this instance the troughing was mounted on the wall about 9 in above floor level. Bent steel conduit brought the heating cable from the housings under the floor into the bottom of the troughing. Although in this particular case it was thought wise to place the troughings on the wall instead of having them in the floor, it must not be thought that the troughing covers cannot be made watertight. This is, of course, quite possible, and it is essential as most floors are liable to become wet during ordinary cleaning.

It is sometimes necessary to lay wooden floors in cases where some resilience is required for dancing, etc. The main wooden joists are laid on the solid floor with the floor-heating housings in between. The expanded metal is installed in the usual way between the joists and the remaining space is filled with dry sand. The floor boards are then fixed in

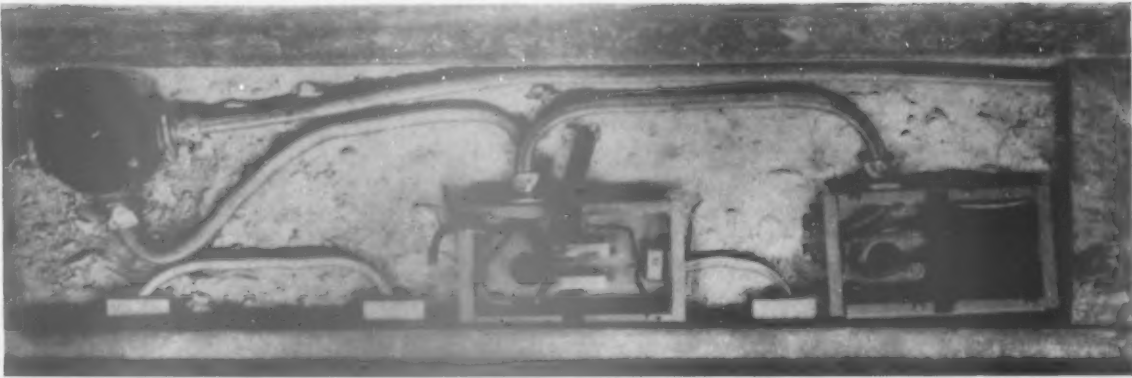


Fig. 3. Wiring in trough.

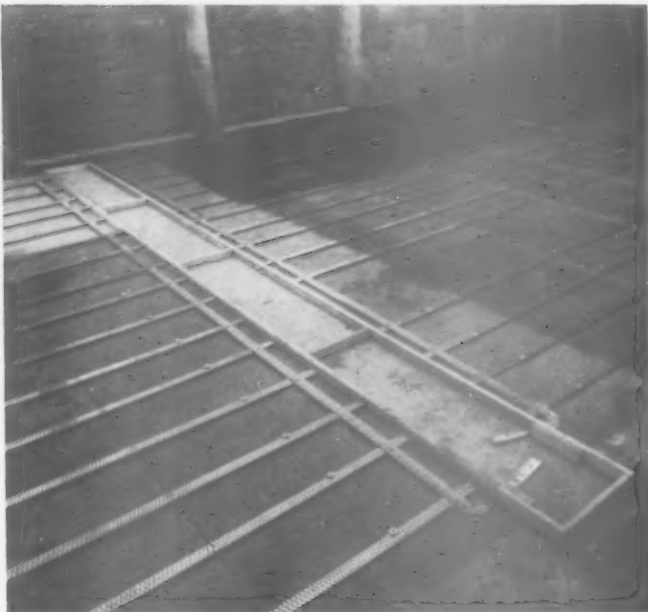


Fig. 4. Building of trough.

position, care being taken that they are in contact with the sand and that no air pockets are left.

The wiring of a floor-warming installation presents no special problems. The heating cables themselves comprise two cupro-nickel resistance conductors insulated by asbestos and enclosed in a lead sheath. The conductors are joined at the far end of the cable which is therefore a self-contained heating device. The cable is supplied in standard lengths of between 55 and 150 feet, the electrical loadings being about 10 watts per foot run.

It has been mentioned that, in certain circumstances it is desirable to supplement electrical floor warming by wall panels. Figure 6 shows a wall panel in position in its recess in the wall. The construction is much the same as a floor installation, except that the housings and the troughs are made up as one unit. If the panel is used in an outside wall a thermal insulating quilt is inserted between the panel and the wall. After the panel has been fitted into position and wired, expanded metal work and trough covers are added, and the wall is finished off.

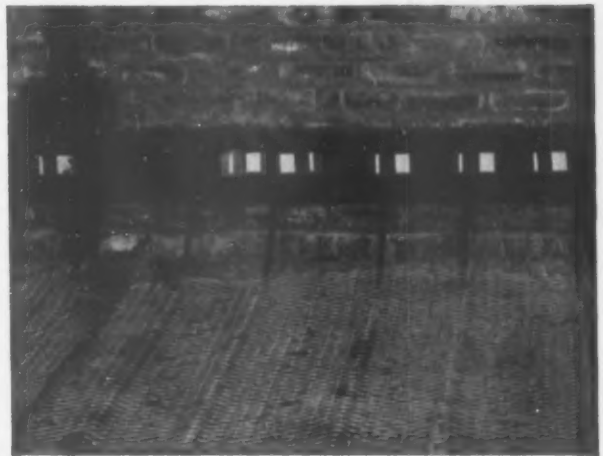


Fig. 5. The installation of a garage floor-warming scheme.

Fig. 6. A wall panel under construction.



## Electrical Floor Warming

In all but the smallest installations, the electricity supply is made available through a relay which in turn is operated by either a radiant thermostat provided in the air space of a room or by a thermostat embedded in the floor. To obtain proper control of conditions within a building, a combination of both types of thermostat is advantageous. The details of the control equipment are quite involved and rather beyond the scope of this Paper. Moreover, much experimental work still requires to be carried out, and I believe a system of control will be developed which will gauge the heat remaining in the floor in conjunction with the external temperatures and switch the heating system on at the latest possible time to ensure the floor is brought up to the necessary temperature by 7 a.m., the time the supply is switched off.

Experience in South East Scotland has largely been confined to the Panelec system and this Paper would not be complete without some reference to the somewhat simpler and cheaper system in which a heating cable is buried solidly in the concrete floor. The cable mostly used for this purpose is the Pyrotex cable.

I am indebted to Mr. Watson, the West Kent Manager of the South Eastern Electricity Board for the following description and photographs of a Pyrotex installation he has recently carried out in Orpington.

The main constructional difficulty in using Pyrotex seems to be the problem of keeping it in place while the top screed is being laid. Mr. Watson's ingenious solution is first to lay a  $\frac{1}{2}$  in screed and then with the aid of a moulding device to make trench impressions in this thin screed which, when hard, will receive the Pyrotex heating cable. Figure 7 shows the moulding device and the  $\frac{1}{2}$  in screed after the trench impressions have been made. The trenches are 4 in apart. In Figure 8 the heating cable is being laid with the help of a grooved wooden wheel. The wheel creates an upward bending effect to the cable which, when held in position at the ends, ensures that the conductor lies securely in its grooves throughout the straight lengths.

Figure 9 shows the top 2 in screed being laid while Figure 10 illustrates two of the supply ends of the heating circuit. One is completed and finished to floor level and the other is partially completed and awaiting the final screed. The 6 in  $\times$  3 in boxes are of bronze to avoid electrolytic action.

### Capital Cost

Electrical floor warming is exceedingly simple to install as compared with, say, a central heating system. No boiler, boiler-house, chimney, pipework, coal storage, etc., are required, and as a result it can be taken that on average the installation of the Panelec system of electrical floor warming will involve only two-thirds the capital cost of an ordinary central heating system.

Figure 12 summarizes the capital cost of some typical floor-heating installations in South-East Scotland.

All these floor-heating schemes have been or are being carried out in the Panelec system. Where the owners of a building are prepared to accept a heating cable buried solid in the floor, the cost can, of course, be substantially reduced.

The lower capital cost of electrical floor warming is a great attraction, particularly in times when capital expenditure has to be kept at a minimum.

### Annual Operating Costs

It would be foolish to attempt to lay down that electrical floor warming is the cheapest method of heating any building as some buildings, by reason of use or construction, are more suited to floor warming than other buildings.

Floor warming necessitates the building being heated 24 hours a day. It is therefore eminently suited to buildings like hospitals, which are in constant use. It is, however, less suited to buildings requiring warmth for very few hours each day.

We have found, however, that, if everything is taken into account, electrical floor warming can generally compete favourably with other methods of heating.

Some persons ask for an estimate of the annual costs of



Fig. 7. Installation of Pyrotex floor-heating cable.



Fig. 8. The cable being laid in ready-made grooves.

heating a building by floor warming and then compare this with the cost of so many tons of coal or coke. Such a comparison could never be favourable to electrical heating even if the electricity were sold at the bare running costs of production.

[Continued on page 469]

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## Electrical Floor Warming

We encourage the architect to discuss the comparison of the heating costs with us and, as would be expected, there is often difficulty in arriving at an estimate of the solid fuel consumption required to give the same degree of comfort obtained from a floor-warming scheme. Usually we find inadequate allowance is made for factors such as boiler banking and stand-by losses, pipe losses, and the various operating considerations such as lack of skill on the part of boiler attendants, variable quality fuel, fouling of boiler between cleaning periods, etc., which all go towards making solid fuel heating efficiencies of the order of 40 per cent instead of the 60-70 per cent sometimes claimed.

Some actual or estimated electricity consumptions and total heating costs are shown in Figure 12. Electrical floor warming was chosen for all these buildings because those responsible were satisfied as to the financial and other advantages of electricity. It can be said that so far our experience is that the actual results have in every way come up to expectation. It has been very gratifying that in several instances we have had an architect come to us a second time as a result of the proved success of an earlier installation.

### Value as an "Off Peak" Load

There is no need to emphasize the great importance of developing "off peak" loads. A special Paper on this subject was read at last year's conference and Area Boards are taking active measures to encourage the "off peak" use of electricity.

I believe "off peak" storage space heating is the most promising method of securing really worth-while results. In cases where it has been installed the building's hot water requirements are met from "off peak" storage electric water heaters, and it is fairly certain that if hot water or steam heating installations had been provided, the hot water supplies would have been obtained from the same heat source, using calorifiers.

Figure 11 illustrates "off peak" water heaters installed in a floor-heated building. Each heater contains 500 gallons of water and is fitted with two 30 kW immersion heaters. The cylinders are lagged with 3in of insulation enclosed in a sheet steel casing. This type of water heater is particularly suitable to buildings like those referred to in Figure 15, as by combining the storage and water heating installation in the same system, capital costs are kept at a minimum.

As an example of the possibilities, a town of 50,000 inhabitants might have a load of the order of 10,000 kW. The load factor would probably be about 36 per cent. The buildings referred to in Figure 12 when completed will have an average "off peak" consumption of 500,000 units per annum, and if 24 buildings of this size adopted "off peak" electrical

space heating, the load factor would be brought up to 50 per cent.

It has already been pointed out that large buildings can be adequately heated with a supply restricted to the night time. If, however, the Area Board are also able to make a mid-day boost available, the capital cost of the floor warming equipment can be substantially reduced.

An interesting likely development is the use of ripple control systems. I see no reason why "off peak" supplies could not be given subject to a condition that supplies would be liable to interruption by the Board for periods not exceeding four or five hours and with not less than three hours between any two interruptions. The control engineer would do the switching having regard to the system load and supplies would not be interrupted unnecessarily, as happens with time switch control. This would be to the advantage of the consumer in that his costs of installation would be kept at a minimum and to the Board in that the load curve could be accurately controlled and the maximum number of "off peak" units would be sold. Storage water heaters could also be connected to a ripple controlled circuit.

### Electricity Tariffs

The electrical space heating load can only be obtained if suitable "off peak" tariffs are available. We all recognize that unless some special circumstances are present, the application of the ordinary unrestricted tariff would make the cost of electrical space heating quite prohibitive. Electrical floor warming is eminently suitable for the "off peak" use of electricity and can therefore be the subject of special "off peak" rates. The running charge of the Central Authority's bulk supply tariff increased by the electrical losses between the point of bulk supply and the consumer's meter is the minimum rate which could be offered. If an Area Board is involved in additional capital expenditure in making the "off peak" supply available, the annual costs and charges on this expenditure should also be recovered. I believe that, in addition, "off peak" supplies should make some contribution to an Area Board's general expenses.

In South-East Scotland we have obtained quite a number of "off peak" floor-warming loads with a low voltage tariff of 0.475d per unit based upon a coal cost of 38s per ton. This compares with a bulk supply tariff running charge of 0.33d per unit.

In the event of the Board being involved in a heavy additional expenditure in making the "off peak" supply available, either a capital contribution or an annual service charge is required in addition to the charge of 0.475d per unit plus coal clause. This tariff is available for supplies exceeding 50 kW taken between the hours of 7 p.m. and 7 a.m.

As the domestic tariff follow-on rate is ¾d per unit, it

Fig. 9. Pyrotenax installation laying of top screed.



Fig. 10. Jointing of Pyrotenax wiring.



## Electrical Floor Warming

might be argued that there is not much scope on present-day coal prices for a reduced charge for "off peak" space heating. Furthermore, domestic floor-warming installations could not be restricted to the night hours but require a mid-day boost to maintain adequate comfort during the afternoon. Against these arguments, however, it must be recognized that it is desirable that something should be done to prevent the floor-warming load coming on during peak periods, and that full space heating at 4d per unit can hardly compete with the modern solid fuel grate. One Area Board has published a restricted hour tariff which enables even domestic consumers to purchase "off peak" supplies at about 4d per unit. The supply is available at all times except between the hours of 7 a.m. to 12 noon every day except Sundays and between the hours of 3 p.m. to 7 p.m. every day except Saturdays and Sundays. There is a good deal to be said for such an arrangement as it safeguards the Board against peak loads and it makes electrical space heating more competitive in cost.

### Floor Coverings

The effect of a heated floor on floor coverings is always raised, and at a very early stage we decided to conduct tests on a representative range of various floorings. A new building the Board had erected near Falkirk gave the opportunity. A number of manufacturers of flooring materials co-operated with us in laying sample floors in thirteen different offices and passages, etc., and the following floor finishes were installed:—

Cork Tiles	Armstrong Cork Co., Ltd.
Fleximer	Semtex, Ltd.
Accotile	Armstrong Cork Co., Ltd.
Korkoid	Korkoid Decorative Floors.
P.V.C.	De La Rue Floors.
Interfusion	Interfusion, Ltd.
Alamac	Macdougall & Son, Ltd.
Semastec Tiles	Semtex, Ltd.
"Parafloor" Rubber	North British Rubber Co.
Indasco	Hugo Knoblauch, Sons & Co., Ltd.
Vinyl Tiles	Semtex, Ltd.
Heavy Linoleum	Tayside Floorcloth Co., Ltd.
Marley Tiles	Marley Tile Co., Ltd.

The building has been in use for almost two years, and all the above-mentioned finishes have given every satisfaction. It is, of course, important to remember that there are many other reliable floorings available, and I see no reason why they should not be equally successful with warmed floors. As our experiment has shown that the wide range of flooring materials mentioned above can be used successfully we have been led to the conclusion that almost any type of flooring can be used on a warmed floor.

It will be noted that the ordinary wood strip floor was not tested. This type of floor has subsequently been installed in some other floor-heated buildings and so far has proved successful. As with other materials likely to



Fig. 11. Off-peak electrical water heaters

contain moisture, it is important to dry out the material before fixing it into position. This can be done by laying it temporarily in position for a number of days so that shrinkage is taken up before the floor is permanently laid.

### Some Operating Results

The use of electrical floor warming will increase rapidly when sufficient actual results are available to show that it will give adequate comfort as cheaply as other fuels.

Five of the buildings referred to in Figure 12 are operating successfully and providing all that could be desired in the way of warmth. As regards electricity consumption, it can be said that the first building mentioned in the figure was completed over three years ago and the electricity consumption during 1952-53 was 4 per cent less than the estimate on which was made the decision to install electrical floor warming.

The next building to be commissioned was Building B. The heating was first switched on in September, 1952, and during the winter 1952-53 the actual consumption was about 25 per cent above the original estimate. Results obtained so far this winter indicate that the total consumption will be well within the estimate.

Building D was put into use during the winter 1952-53. It appears that the actual consumption for the winter 1953-54 will be within the estimate of 393,000 units, although the building is so new.

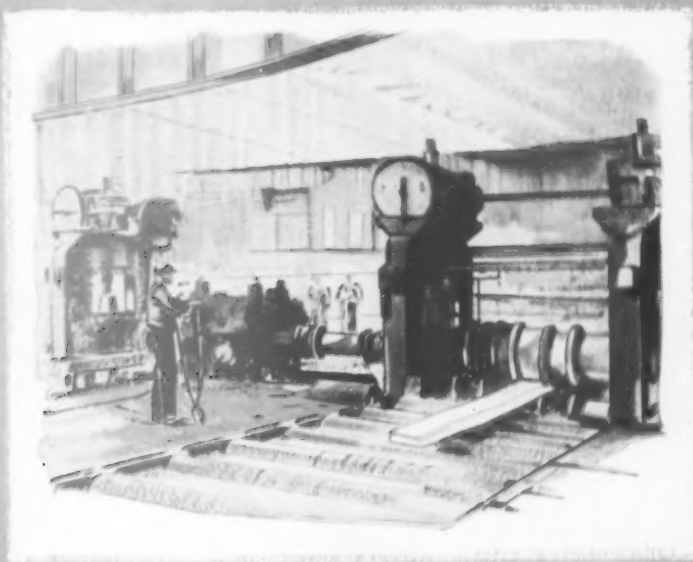
Building K was first occupied in September, 1952. The electricity floor warming consumption during the winter 1952-53 was almost double the estimate of 31,318 units due to the maintenance of high internal temperatures during the drying out period. The consumption during last winter was considerably reduced and it is now almost certain that the actual figure for 1953-54 will be well within the original estimate.

Fig. 12. Capital cost of some typical installations

Reference	Type of Building	Size of Building		Heating Installation			Estimated Annual Consumption	Average Temperature Rise	Consumption per sq. ft. per annum	Capital Cost		Estimated Annual Heating Costs
		Floor Area	Cube	Building Heat Loss	Loading in Floors	Loading in Walls and Ceilings						
		Sq. ft.	Cu. ft.	B.Th.U./hr.	kW.	kW.						
A	Industrial	3,000	24,000	104,700	30.70	Nil	51,580	32	17.2	710	—	200
B	Industrial	24,000	365,000	975,060	284.07	2.25	406,000	32	16.9	5,170	8,160	1,070
C	School	42,200	490,000	1,300,000	388	Nil	450,000	30	15.4	11,550	—	2,750
D	Public Services	20,000	258,000	870,000	232	30	393,000	35	19.4	6,610	—	1,640
E	Showroom	1,680	22,000	82,900	25.4	Nil	41,150	37	24.4	706	—	170
F	School	24,120	265,000	662,190	215	3.35	337,500	27	14	8,812†	18,120†	1,810†
G	Offices	5,540	46,190	196,130	61.4	Nil	99,470	35	17.9	1,490	—	400
H	School (Stage I)	15,870	164,950	740,850	200	30	381,600	42	24	8,180	—	1,720
I	Public Services (Stage I)	9,405	96,680	304,110	78.58	22.08	180,000	32	19.1	13,420*	22,832*	3,540
J	Public Services	6,276	61,500	238,000	68.25	75	110,000	32	17.5	1,910	4,100	458
K	Offices	2,100	19,000	75,600	24	Nil	38,880	35	18.5	550	—	160

\* Costs for a total installation of 650 kW.  
† Costs include domestic hot water supplies.

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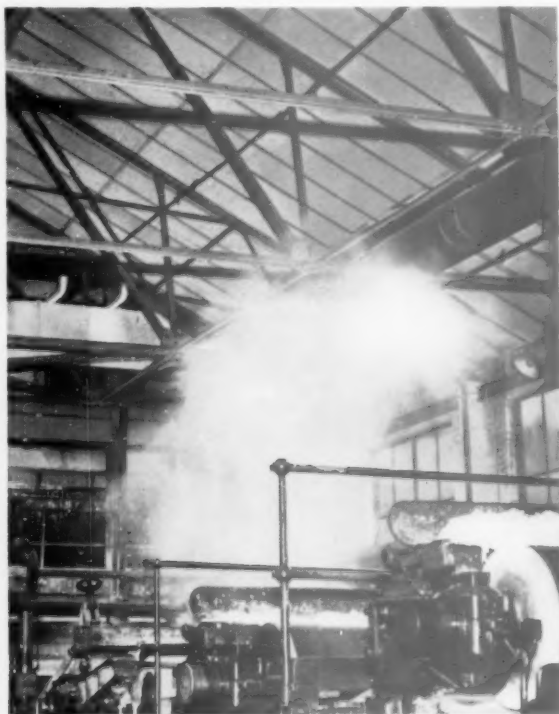
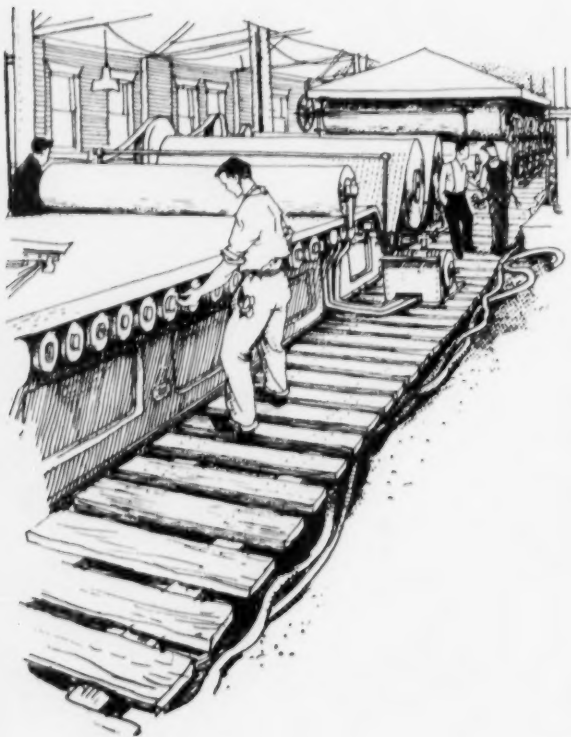
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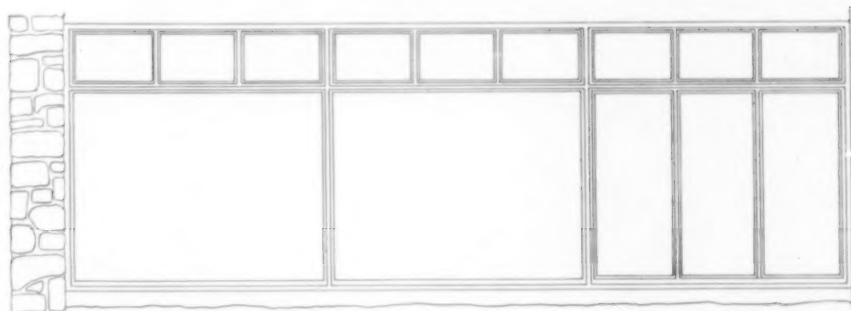
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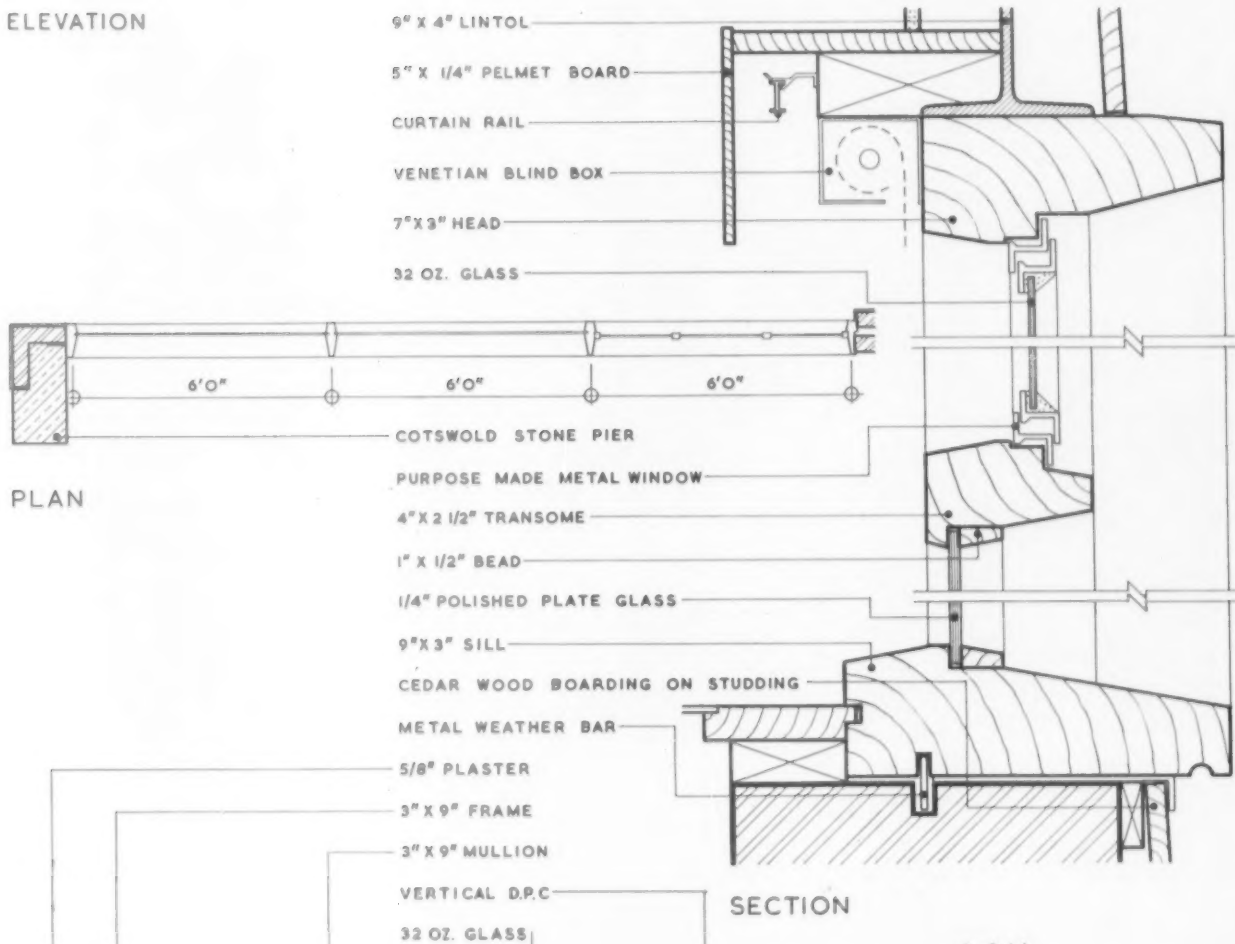




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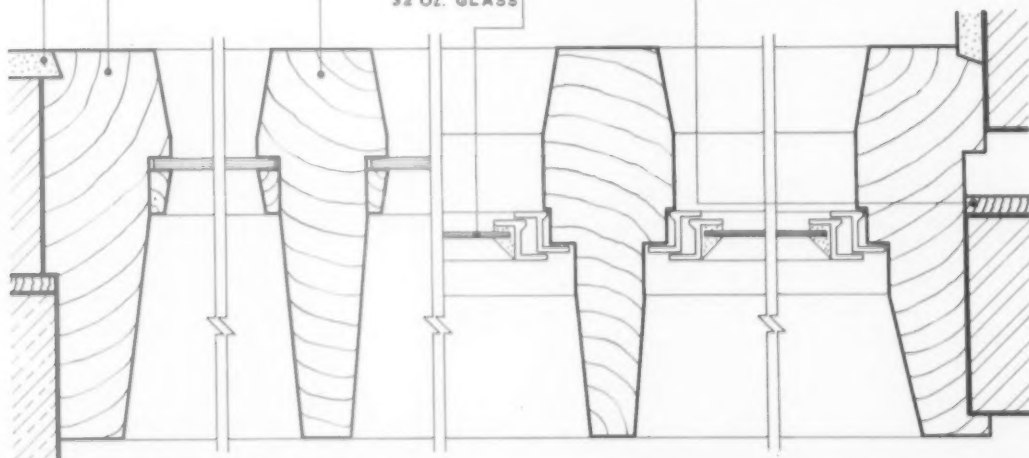


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## Proposed Code of Practice

The Cambridge University and Town Waterworks Company issued the following announcement on April 9.

Over 100 architects, builders, engineers, plumbers and others interested in housing and water supply attended last evening a meeting convened by the Cambridge University and Town Waterworks Company to discuss the possibility of ensuring that in all new buildings water pipes and fittings should be so located and protected as to prevent damage by frost.

A resolution was passed to establish a Working Party charged with the task of preparing a simple Code of Practice relating to the design, location, installation and protection of water pipes and fittings. It was explained that the intention is that the provisions of the Code when approved and adopted shall be observed by all local architects, builders and plumbers, and enforced, so far as may be necessary and practicable, by the Water Company.

The meeting was held at the University Department of Engineering with the Rt. Hon. N. U. Willink, Vice-Chancellor of the University and Chairman of the Water Company, in the chair.

In the first half of the meeting the points of view of the various interests were briefly expressed by Mr. Philip Porteous, Managing Director of the Water Company; Mr. W. K. Ferguson, Chairman of the Cambridge Chapter of Architects; Mr. H. D. Ridgeon, President of the Cambridge Association of Building Trades Employers; Mr. W. Knill, President of the Institution of Water Engineers; and Mr. W. Pittsow, Property Surveyor to the Cambridge City Council. All speakers enthusiastically supported the Water Company's plea for prompt and energetic collaboration in the solution of the problem. Thereafter Mr. S. C. Bowles, Manager of the Water Company's Fittings Department, described with the aid of slides various means of installing and protecting pipes and fittings to reduce the risk of freezing.

During an interval for refreshments visitors inspected the Water Company's exhibition of damaged pipes and fittings, modern insulating materials, models of anti-freeze plumbing installations, etc.

Upon resumption of the meeting a keen and lively interest was displayed by a number of speakers in their contributions to the general discussion and it was finally agreed that the working party to prepare the code should comprise: 2 architects; 1 quantity surveyor; 2 builders; 2 (alternating) master plumbers; 2 (alternating) foreman plumbers; the Chief Regional Architect to the Ministry of Housing and Local Government; the Cambridge City Surveyor Works Superintendent of the University Department of Engineering; the Managing Director of the Cam-

bridge Waterworks Company; and the Manager of the Company's Fittings Department with power to co-opt.

## One-day Study Tours, 1954

The following one-day tours have been organized by the Town and Country Planning Association for the summer months. They are open to members of the T.C.P.A. and others interested in the development of the new towns and the location of industrial and housing estates. The cost in each case will be 21s, including coach journey, lunch and tea, and all gratuities. Details will be sent upon application to the Secretary, T.C.P.A., 28, King Street, London, W.C.2.

*Saturday, May 15.* Stevenage and Hemel Hempstead New Towns in Hertfordshire. The master plans will be explained on arrival, followed by visits to neighbourhoods in course of development, factories and shopping centres.

*Thursday, June 10.* L.C.C. Estates at Lansbury and Harold Hill, and Basildon New Town (Essex). The tour will be led by Mr. Reginald Stamp, Chairman, Housing Committee, London County Council. In addition to housing, factories, etc., the party will inspect a large sewage works under construction in the Basildon area.

*Wednesday, July 14.* Welwyn Garden City and Hatfield (Herts) and Harlow New Town (Essex). Residential and factory areas, shopping centres, community centres, schools, etc.

*Wednesday, September 15.* Travelling through Runnymede to Windsor (staying short time to visit site of proposed pleasure gardens), tour of Slough Trading Estate with guide, and Bracknell New Town (Berks).

## A Domestic Heat Pump

One of the latest developments in the practical domestic application of the heat-pump principle is to be seen at the London works of Brentford Electric, Ltd., Kidbrooke Park Road, London, S.E.3. It is named the Duo-Therm and comprises a refrigerator unit and hot water tank. Installed in the domestic pantry, it rapidly cools the whole space and maintains it at a temperature of approximately 40° F. at the same time utilizing the extracted heat to raise the temperature of the 30 gallons of water in the tank, and after about four hours, to maintain the temperature at approximately 140° F. In addition the Duo-Therm ice-box allows ice-cubes to be made and is ideal for storage of bottles of milk, etc.

The immediate forerunner of the

Duo-Therm caused much interest at the Building Exhibition last November. During the last few months, the Brentford Duo-Therm has been put through a number of severe tests and the makers are satisfied that it will shortly be ready for installation in new homes. They claim that it provides the housewife with a cold pantry every bit as efficient as a refrigerator and with far greater facilities for the hygienic storage of food. It also provides a supply of hot water adequate for all the bathing and washing requirements of the average household. And furthermore it provides the housewife with these two household requirements, refrigeration and hot water, at less than half the cost of electric water heating alone—the refrigeration is free.

It is proposed that a number of Duo-Therms should be installed throughout the country by architects and builders working in close co-operation with the Electricity Area Boards. The makers will get regular reports from the various people concerned with these "field" tests, and will use the information gained from architects, builders, area board managers and home owners to make any modifications and refinements thought necessary before going into mass production.

The co-operation of architects, who wish to install the Duo-Therm on test, is invited. A limited number of models are being produced for this purpose.



The heat-pump cabinet stands 2ft square in plan and is 4ft 6in high. The cost is expected to be under £200.

# LIBRARY NOTES

## **Prestressed Concrete Design and Construction**

By F. Walley, M.Sc., A.M.I.C.E.  
Published by H.M. Stationery Office.  
Price 30s.

**A**LTHOUGH this book has been written primarily for Engineers there is every reason why it should become part of the library of the more enlightened Architect. While one must have a firm basis of a knowledge of the first principles of structures to understand the chapters on the theory of prestressed concrete design, there is no reason why very nearly all that there is to know on the subject should not be learnt from the book.

F. Walley, now at the Directorate General of Works of the Ministry of Works, was at one time with the Building Research Station, where he carried out a great deal of research into prestressed concrete and prestressing steel. A great amount of his work appears almost anonymously, in this book, whilst mention of other sources of investigation is freely made.

A person wishing to learn how to design prestressed concrete for the first time will find that there is an example worked out for all the basic cases that he is likely to come across. On the other hand, someone who has had some little experience will find the chapter on the behaviour of steel and concrete when loaded, and the resultant losses, most interesting. The more advanced portion of the book on composite construction, tank construction and ultimate design, may, to the initiate, present nothing new but will probably put things in a new light.

The main systems of prestressing are described in sufficient detail for their principles to be understood. It is perhaps a pity that whilst the French and Belgian systems of post tensioning used in this country are described, no mention is made of the Gifford-Udall system. This is a very recent British addition to the field, and may have arrived on the market too late to be included in the first edition; it is hoped that the omission will be rectified in future editions, of which there will probably be many.

There are in the book a number of very excellent photographs which bring out many of the points that Mr. Walley makes. The drawings are clearly shown and well reproduced. The tables at the end of the book will reduce quite a lot of the pure drudgery of designing in prestressed concrete and give, amongst other things, the moment of inertia and similar information for a series of I-section beams.

A minor criticism is the inconvenience caused by the omission of an alphabetical index; nothing is more infuriating in a technical book than to

have to wade through a whole chapter in order to pick up a certain point. In spite of being infuriated more than once by this while reading the book, it is still recommended.

R. A. S. J.

## **European Architecture in the Twentieth Century, 1924-1933, Vol. Two**

By Arnold Whittick. Leonard Hill.  
Price 42s.

**T**HE second volume of Mr. Arnold Whittick's history of the development of modern architecture fulfils the expectations raised by the first; it is the historian's unbiased and yet not by any means detached effort, and entirely free from the intellectual and aesthetic mannerisms so prevalent in post-war writings on architecture.

Mr. Whittick's subject is the most fascinating period in modern architecture, the period when the ideas and conceptions of those who made it were at last forcing their way, when opposition was fierce and when every modern building was a victory. Dessau and Stuttgart, Auteuil and Vaucresson, Hoek van Holland and Hilversum were places of such victories. How fresh these buildings were, how great their impact, and how they did free the mind!

To look back from the present period, where all and sundry "know," to those days when a few men were exploring the new field they had opened up, and to understand the feelings that were aroused by these new buildings is not easy; the enthusiasm of the time of struggle turns into the self-assured complacency of the period of achievement.

Mr. Whittick traces the fascinating story of the mid-1920s and early 1930s in his quiet and convincing manner, and bases it firmly on a wealth of fact as befits the historian. This latter alone makes the work both notable and useful; but its very excellence lies in Mr. Whittick's undoubted ability to write history. As such it will survive many other attempts to interpret the development of modern architecture which by their jargon alone may become unreadable to a later reader.

The work is accompanied by a large number of photographs and plans, and the latter, most commendably, are of a size which permits them to be read; they do not appear as mere postage-size appendices to glossy photographs but are, in keeping with the emphasis modern architecture places upon them, given the amount of space they deserve. Lastly, the book contains an exhaustive index, and the production

is, with the exception of a few misprints, excellent throughout.

WALTER SEGAL.

## **Italian Gardens of the Renaissance**

By Shepherd & Jellicoe. Published by Alec Tiranti, Ltd. Price 25s.

**T**HE publication of that fine volume of Plans and Photographs by Shepherd and Jellicoe was one of the events of the exciting period following the first world war.

The first publication, in folio, is long out of print, but its revival in a pocket edition is more than welcome.

It contains about sixty drawings and nearly one hundred and fifty photographs. The drawings are made with a sensitive appreciation of form and show fine scholarship. The photographs are not merely "good views" but are closely related to the plans by defined viewpoints.

To study these plans is to sense something of the quiet dignity and charm of the originals, Baroque in its finer meaning, the word which so often conjures up visions of wild curves and neurotic forms but which in many of the Italian gardens displays a pleasurable serenity.

The Italian Garden relies much upon carefully studied form almost architectural, the careful disposition of grouping and pattern its relationship to the House and to the country. In the latter the gradual transition of the English conception, but often a "Gateway" to the world outside, sometimes in the terraced gardens, an almost abrupt viewpoint, a grandstand to the things beyond.

There is not the exuberance of flowers so typical of the English garden, neither are there the great trees of the English parkland. Their place is taken by the Cypress, with its valuable verticality, the Poplars and the formal cut box. From the distant country view is often the glorious colour of the olive grove.

Yet, with all its formality, the Italian Garden is not a rigid conception but rather a finely balanced one, a great variety gently directed. The use of water, as is natural in a hilly country, is abundant and varied, from the tumbling cascade to the quiet reflective pool, and there is much play with terraces and steps.

Much of this belongs to another age usually referred to as one of "wealth and leisure," though the lives of some of the Renaissance Artists suggests little of the latter.

The text, written in English and French (but not Italian) is brief but illuminating and very readable.

This book should be inspiring to the

modern Architect—the gap between the best of modern and the best of these formal gardens is only in years.

L. H. BUCKNELL.

## Building Science, Vol. II

By D. A. G. Reid. Longmans, Green & Co., London. Price 10s 6d.

THIS excellent book takes the student a stage further along the road of building science which becomes increasingly important as a contribution to a proper understanding of building.

The book is divided into three main sections dealing with the fabric, the structure and services. Each section has a number of sub-divisions.

The opening sub-section discusses very adequately and simply the exclusion of dampness. It would be worthwhile for all who build to buy this book to read and re-read this short well illustrated chapter, as it would eliminate many troubles that arise from this cause.

The second chapter on thermal insulation is a clear exposition of the subject which is not as well understood in its simplest terms as it should be. Equally the third chapter on chemical changes which affect durability covers the basic knowledge needed to appreciate the causes of failure of many building materials.

The next two chapters deal with selection of materials in the three most traditional spheres, namely brick, stone and timber. One is a little bothered about the freezing test given for clay bricks and it may lead readers to believe that it is a reliable guide but if that were so it seems certain that B.R.S. would have proposed it for inclusion in B.S.1257 which is quoted as the accepted methods for testing clay bricks. One wonders if too much attention is given to natural stone which, except as an aggregate for concrete and as roofing slates, is now so little used. The full discussion of timber is very well prepared.

The second section on structure commences with simple explanations of the strength of the more common materials and continues with a discussion of the properties of beams and framed structures of simple types; these are well developed in a form easy to understand. The last chapter of this section explains the basic properties of work and energy of machines.

The last section on services explains the simpler scientific factors involved in heating, ventilation, electricity, water supply and drainage.

The volume as a whole should prove to be a very helpful to both students and those responsible for courses on building science. One can but hope that the author will prepare yet another volume covering the more complex subjects in this sphere as his writings and illustrations are clearly expressed and easy to follow, thus being extremely understandable to the

student. What a pity it is that such excellently presented matter was not available to previous generations of students of building as it would have been an aid to the avoidance of many pitfalls which have been experienced in our industry.

P. C.

## List of Ancient Monuments in England and Wales

Prepared by the Ministry of Works. H.M. Stationery Office. Price 5s net.

THERE is a healthy revival of interest in what we used to call our "national heritage" without very often looking into the deed-box. For one thing, the war provided a timely reminder that it may suddenly be too late for the things we "never got around to," and resulting population movements such as Service postings and civilian evacuation sometimes brought us into their vicinity. For another, there is a new putting of such things in perspective in relation to contemporary work: the younger generation is on the whole, I think, both more scholarly in this, and less derivative, than my own. Moreover, the current preoccupation with the archaic is shared by many painters and sculptors of the "Moore-land" school of thought, and fashionable impetus is thus given—for them as needs it.

It is, however, still a little difficult for the ordinary chap to pinpoint those roots and to find out, for instance, where, when and how they can be seen, and who is the "caretaker." The Ministry of Works has now re-issued its List of Ancient Monuments, corrected up to the end of 1952—for the first time since 1939. The listed monuments are selected by a number of bodies represented on the Ancient Monuments Board, the Minister of Works also having power to add an item. The list is therefore comprehensive as well as authoritative, including Crown or Duchy property not necessarily in the charge of the Minister, distinguishable by a system of keying from what is partly or wholly in his care. Some six thousand items are listed.

A short historical guide prefaces the list, which is a clear, useful and portable *vade mecum* for those who can from time to time get up off their own basic elements and *walk* (the others, whom absolute horse-power hath corrupted, don't deserve to be catered for). It is sectionalized by counties, arranged under generic headings, and annotated. One can hardly "review" such a list, but a cursory examination suggests some minor discrepancies and omissions for which there are probably explanations connected with the overlapping responsibilities in this matter, at which I was guilty of poking gentle fun in these columns some time ago. But I couldn't be more cognizant of the difficulties, having had a little to do with the listing of protected monu-

ments overseas, where the difficulty of on-spot checking was increased by the enemy's inconvenient propensity for being on that spot first.

A recent nostalgic re-visit to boyhood haunts provided an opportunity to try out the list *in situ* in West Cornwall. This brought to light some points to watch—for instance, items are apparently grouped pretty broadly by parish or district, and some stone crosses at e.g., Lelant are a tidy step from St. Ives, against which they are listed. Also, one of them appears to be duplicated, but Ministry of Works wouldn't intentionally double-cross us, I feel. Again, I was glad that memories of hut-hunting deterred me from approaching the Chysauster Hut Clusters from Madron, as the list indicates. Incidentally, excellent tidying-up is being done there.

The ideal would, of course, be a hook-up to the Ordnance Survey by means of map-references, but many such monuments are marked there in the conventional "gothic," and the enthusiasts for this pursuit are notoriously Devils for Maps. By the same token they are also generally Men of Taste, and the format does seem unnecessarily dowdy and unimaginative. Short of lushness or arting-up, surely something better than barmaid-pink covers with insulating-tape spines could have been achieved with the good, if utility, typography employed. Otherwise, full marks to the Minister of Works for his history homework.

BASIL MARRIOTT.

## Victorian Architect—The Life and Work of William Tinsley

By J. D. Forbes, Bloomington, U.S.A. Indiana University Press. Price \$5.

THIS is a book calculated to turn any English architectural historian green with envy. It is beautifully produced in a clear type on good paper with wide margins, the reproduction and printing of the illustrations is all that could be desired, there is a complete index and references to all the author's sources are given in a Bibliographical Note. The whole book is a model of its kind.

Mr. Forbes has been lucky enough to obtain access to William Tinsley's own autobiographical notes and diaries, he has had the co-operation of members of the Tinsley family in the United States and in Ireland, as well as the help of past and present owners of Tinsley buildings on both sides of the Atlantic. Last but not least he has had grants from his College for travel and photography and the publication of his work has been subsidized by the "First Citizen of Indianapolis."

Only one thing has stood in the way of complete success, the unfortunate but insuperable fact that Tinsley him-

self was not even a second-rate architect and that neither his life nor his work are of any general interest. The too obvious sub-title for this book would be "Much Ado About Nothing."

One can only sympathize with the author who has to find a fresh subject for study, there simply are not enough genuinely eminent Victorians to go round. Even in Europe it is becoming increasingly difficult for the Thesis writer to find a worth-while architect in the fashionable period—the finest specimens have already been captured and labelled. In America the situation must be well nigh impossible for many more architectural historians with much more money to spend are chasing far fewer architects.

Richardson, Sullivan and Wright have been done and over-done. The Architect-Engineers of the early skyscrapers and the cast-iron merchants have been discovered and potted. The very excellent classical work of McKim is perhaps too close in time to be treated as history, it is just out of fashion. There may be a few hidden gems in out-of-the-way districts but if so they were not produced by Tinsley. The author himself does not seem particularly enthusiastic about the work of his hero and sums up his case fairly enough—"By the tests of his sources, the styles he employed, and the development of his sense of architectural form he emerges as a man fully in tune with his time. William Tinsley was a Victorian among Victorians." There is really nothing more to be said.

Nevertheless perhaps the illustrations to this book do point a moral. Tinsley's early work in the classic manner in Ireland is infinitely better than anything he ever did in later life. Clearly the classical rules, if they are conscientiously applied, do enable a man with no originality and very little taste or education to produce pleasant and completely inoffensive buildings. The Gothic Revival produced a few masterpieces but it completely spoiled the little men of architecture.

J. BRANDON-JONES.

### Architect's Year Book, No. 5

Published by Elec Books, Ltd. Price 42s. Edited by Trevor Dannatt.

THE Architect's Year Book No. 5 can be fairly described as "the mixture as before." This does not mean that it is not a very good mixture and one which all architects should take regularly.

As usual the contents of the Year Book range from new architecture abroad to town planning, and articles on systems of proportion and similar matters of general interest. The technical section in the present volume is particularly well produced and covers a wide range of subjects, including artificial lighting, prestressed concrete, an excellent article by Denzil Nield on

Precast Concrete wall construction, production of precast concrete units, modern wood windows and gypsum wall panels. Each of these articles is thoroughly illustrated by drawings and photographs.

The more general contributions to the book include a series of articles on American contemporary architecture, the examples chosen being those we now know so well such as the Lever Buildings, The United Nations, and General Motors Technical Centre, etc. Perhaps the most interesting article is the one devoted to Post-war Architecture in Western Germany by Peter Moro. This shows the tremendous strides that have been made in Germany since the end of the war, and that contemporary German architecture has already resumed its position of prominence that it held before the advent of the Nazi régime. The textile factory in South Germany designed by Eirmann is one of the best pieces of contemporary industrial building illustrated for a long time.

E. D. M.

### BOOKS RECEIVED

*The Art and Antique Restorers' Handbook*, by George Savage. Published by Rockliff Publishing Corporation, Ltd. Price 15s.

*Building Law Illustrated. A Guide to Practice*, by B. G. Phillips, F.I.A.S., M.R.San.I., M.I.S.E. Published by E. & F. N. Spon, Ltd. Price 21s.

*British Plastics Year Book, 1954*. Published by Iliffe & Sons, Ltd.

*Carpentry, Joinery and Woodcutting Machinery*, by W. E. Kelsey. Published by MacMillan & Co., Ltd. Price 50s.

*Climate and Architecture*, by Jeffrey Ellis Aronin. Published by Reinhold Publishing Corporation, U.S.A., distributed by Chapman & Hall. £5.

*Contemporary Architecture of Japan*, by Shinji Koike. Published by the Shokokusha Publishing Co., Inc. Price \$7.00.

*A Dictionary of English Domestic Architecture*, by A. L. Osborne. Published by Country Life. Price 21s.

*A Metal Window Dictionary*, by W. F. Crittall. Published by B. T. Batsford, Ltd. Price 15s.

*Norwegian Stave Churches*, by Anders Bugge. Translated by Ragnar Christophersen. Published by Edward Stanford, Ltd. Price 42s.

*Outline of Progress*. Commemorating 75 years Industrial Service, 1878-1953. Published by Thos. Ward, Ltd.

*Photographic Enlarging*, by David Charles, F.R.I.P.S. Published by Iliffe & Sons, Ltd. Price 6s.

*Register of Surveyors, Land Agents, Auctioneers and Estate Agents, 1953-54*. Published by Thomas Skinner & Co. (Publishers), Ltd.

*Steel Pipes for Water, Gas, Sewage and Air*. Issued by Stewarts and Lloyds, Ltd.

*School Construction*. A reprint of the articles which appeared in 1953 in the School Construction Section of "Education." Published by Councils and Education Press, Ltd. Price 10s 6d.

*Sacred Edifice*, by John Gloag. Published by Cassell & Co., Ltd. Price 8s 6d.

### International Symposium on the Non-destructive Testing of Concrete

This symposium, which was attended by 140 specialists from 22 countries, was held in Paris January 11-13, 1954, under the auspices of the Reunion Internationale des Laboratoires d'Essais et de Recherches sur les Matériaux et les Constructions. The honorary presidents were Professor Ingle Lyse of Trondheim, President of the R.I.L.E.M., and Mr. L. Stahl, Director of the "Laboratoire Central des Ponts et Chaussées," President of the "Association Française de Recherches et d'Essais sur les Matériaux et les Constructions." The programme was the following:—

#### A—Sonic Tests.

1. Measuring apparatus, scope of application, precision.

2. Quality control, detection of defects, cracks, irregularities, construction joints, variations of composition and proportion, humidity, hardening, etc. . . .

Reinforced concrete control.

Examination of corrosion and frost effects.

3. Use of sonic measurements for evaluating mechanical properties, elasticity, strength.

4. Application to other materials and soils.

#### B—Superficial Hardness Tests and Comparison with Sonic Tests.

#### C—Examination by Means of Gamma Rays and Neutrons.

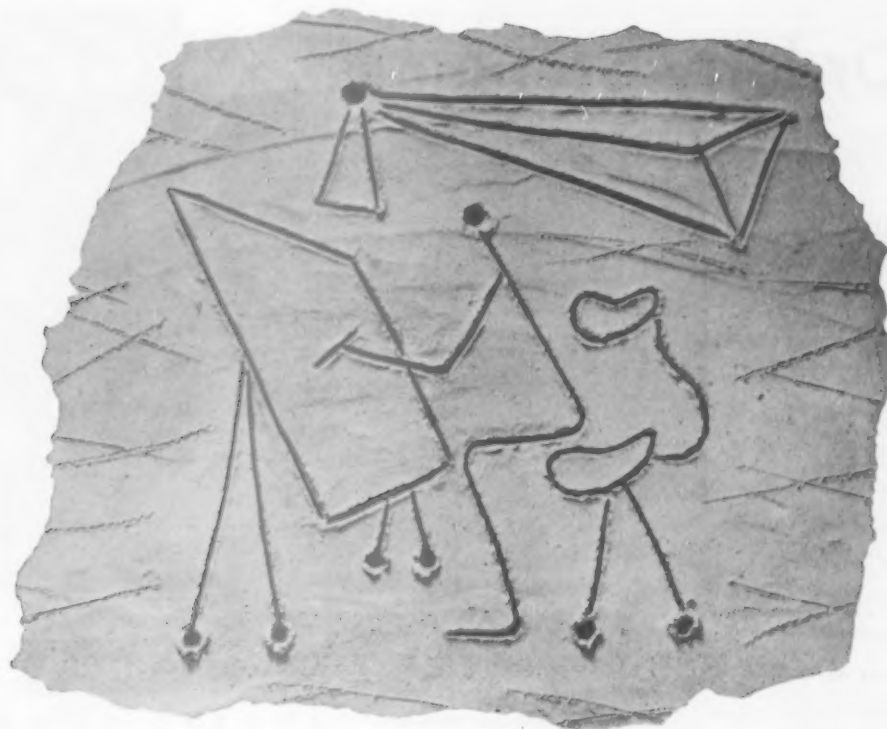
#### D—Possibilities of Control of Placed Concrete by Non-destructive Methods.

About 40 technical papers were presented during the first two days of the symposium, while the final day was reserved for discussion. Written contributions were also received from about 10 persons who were unable to attend the proceedings. Synopses of the papers and microfilm copies of recent technical literature dealing with non-destructive testing were circulated in advance by the R.I.L.E.M. Secretariat.

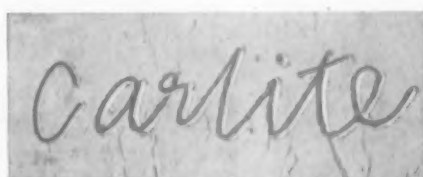
The proceedings of the symposium, presided over by M. Robert L'Hermite, Chairman of the R.I.L.E.M. Committee for Cement and Concrete Testing, are to be published in R.I.L.E.M. Bulletins in the first instance and then assembled in one or two special volumes. The volumes will be placed on sale by the R.I.L.E.M. Secretariat.

### Extension to Patent Office Library

Immediate open access to over 3,500 scientific and technical periodicals in all languages has been provided by a new extension to the Patent Office Library which is now open to the public in the basement of the headquarters building in Chancery Lane, London.



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 Stoke County Council—Residences for Aged and Infirm  
 Liverpool Corporation—Flatted Dwellings  
 Workington—Grammar School  
 Halifax House, Strand, London  
 Reyrolles Factory—New Canteen  
 Speke, Liverpool—New Police Station  
 U.S.A.A.F.—New Operations Block, Burtonwood  
 Guinness Trust Flats—Canteen

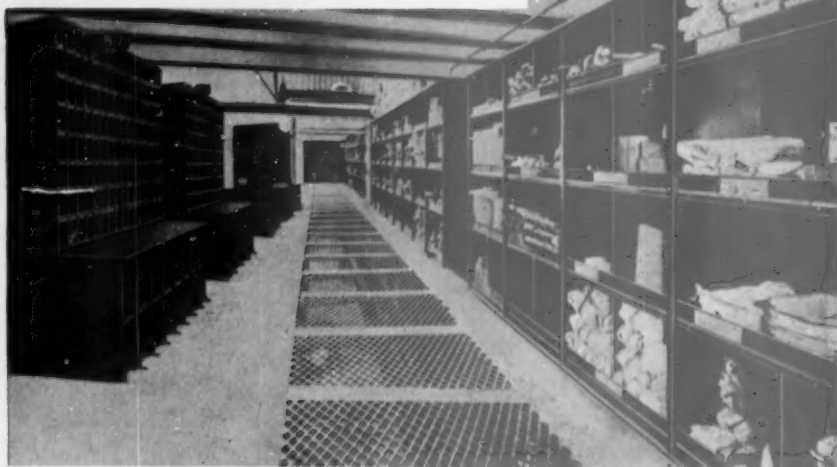
May & Baker, Dagenham—Canteen  
 British Nylon Spinners, Pontypool—New Administrative Block  
 Catholic Church—Hayes, Middlesex  
 Crawfords, London—New Offices  
 Woolcombers, Bradford—Offices and Private House  
 Londonderry—Crawford Square Flats  
 Ransome & Marles—New Factory  
 Edinburgh—Carricknowe School  
 Glasgow—Barlanark Primary School  
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# Tendering

THE Report of the Joint Committee of the R.I.B.A., R.I.C.S. and N.F.B.T.E. on Tendering Procedure,\* which was summarized in the issue of April 1, makes very interesting reading and contains many very sound recommendations which should be brought to the attention of all who are concerned with building and to the clients. It bears out the views that most of the building industry, and the architects in particular, have long held.

The Report recommends that selective tendering should be adopted universally. The main opponents to the system have always been the local authorities, presumably because their members, and probably also their staffs, dislike offending those in their areas who have votes. There is no doubt, however, that the open tendering system has caused the officers of many local authorities much unnecessary trouble arising from the inability of some contracting firms to do the class of work required, and also from their inability to estimate properly, with consequent financial failure. Furthermore, on many occasions much effort is wasted, with a consequent waste of money, in the preparation of tenders as far too many desire to tender. I have always understood that local authorities have not had to adopt open tendering, but it is purely a desire on their own part which has caused such requirements to be included in their Standing Orders. This opinion is supported in the Report. I recall a statement made in the House of Commons many years ago on the subject which, if my memory serves me right, indicated that tenders should be invited from firms of comparable quality and the ability of a firm should be taken into account in the award of contracts.

In order that local authorities might adopt selective tendering, in cases where they feel in doubt about the procedure, the Report offers an excellent proposal which, if adopted, should overcome the difficulties anticipated. One feels, however, that local authorities ought to have sufficient confidence in the honesty of their architects and in their architect's ability and professional status to make a proper selection from those wishing to tender for a specific job. Most certainly the suggestion made in the Report that this is a matter on which the Minister of Housing might make a definite recommendation to local authorities is a good one and should be acted upon. It may be that the Minister, or his advisers, fears that it may make building cost more, but I am sure this is untrue; costs less than reasonable ones achieved by the selection of those who tender may well lead to bad work that increases upkeep costs which, although not figuring in the costs sanctioned for loans, still fall on the general public through the rates.

The majority of private clients seem

to appreciate the merits of selective tendering when these are placed before them by architects, although from time to time clients insist on certain firms known to them being invited to tender. I have had this experience on a number of occasions, and almost inevitably it has led to trouble when they have offered the lowest tender as they have been unsuited for the job.

I am sure from experience that selective tendering for sub-contracts, especially for the higher grades of work, is essential. Moreover, however much general contractors dislike the procedure, I prefer that the architect should obtain the sub-contract prices when these are necessary or even desirable. I like to invite the general contractor to tender for sub-contracts, but only when I know he is really able to do the work himself and will not be subletting it.

The observations in the Report on the types of contract are interesting. I am a little sorry that even more stress was not laid on the "cost and fixed fee" type of contract as I am fairly convinced that it offers many advantages to both the building owner and the architect. However much the Report may advocate fixed price contracts, I feel that a rise-and-fall clause is an advantage in order that both parties are fairly treated, especially until prices have become settled, if they ever do.

On the subject of the number of tenders, the recommendations seem to have erred on the generous side, thus adding unnecessarily to the cost of building. Surely three firms would be sufficient for any work up to £5,000 and five firms up to £20,000 when selective tendering is adopted. It certainly seems wasteful to ask more than eight firms to tender for any work, however large.

As to the time to be allowed for tendering, I would agree that 21 days is a minimum, except possibly for very small jobs, as it takes many days to obtain replies from a range of suppliers of materials and components. I hope, however, that the recommendation will not have the effect of allowing only 21 days for large and complicated estimates, as this time may well be inadequate.

I would like very much to support the recommendation that the results of a tender should be notified immediately to those who tender. Firms like to know as soon as possible if there is a likelihood that their price may be accepted as it influences their pricing of other tenders. It seems to have become a practice for many larger bodies such as local authorities not to open tenders until a meeting of the appropriate committee. My view is that if tenders are due at, say, noon on a given day they should be opened at that time and in the presence of representatives, if they wish, of those who tender. It would be understood that the amounts would be subject to checking of the Bills, if these are involved, and that a decision as to acceptance would be made later. I

agree also with the request in the Report that there should be the minimum of delay in acceptance of tenders, as this may have great influence on the price and on each firm's other tendering.

The paragraphs which refer to the remarks in the Simon Committee Report concerning the importance of planning in advance are extremely important. The preparation of detailed drawings and specifications prior to inviting tenders is a matter which, as a profession, we sometimes fail to do adequately. The existence of the more important of these documents is a very considerable aid to better tendering as those who estimate may know better what is required of them. Equally, it is vitally necessary that full detailed specialist drawings and information should be available at the time the job starts. I am sure that better co-ordination and much less messing about would be achieved if we delayed starting jobs, and even obtaining tenders, until really full information is available to contractors. This involves also the client making up his mind in advance and being made better aware of the costs involved if subsequent changes are made.

The final paragraphs of the Report should be read by all associated with buildings together with the related parts of the Simon Report. First, it is stressed that only little action has been taken on the recommendations of the latter, so it is to be hoped that this will not happen again. The proposed Joint Consultative Committee do much to assist if the three bodies concerned select the right individuals to serve; they must be those prepared to give sufficient time and be persons with wide experience of the problems which will arise. I am afraid this has not always been so in the past.

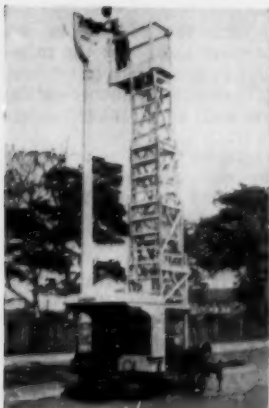
The final paragraph refers to efficiency on both sides of the industry, and to the mistrust by clients of those who build. It must be admitted that there has been inefficiency on all sides, and if there are signs that it continues they should be reported to the consultative committees, who should not be afraid to tell their members of their waywardness. It is inefficiency, and on occasions almost dishonesty, that have helped to foster the mistrust mentioned. There remains much that some architects and some contractors could do to improve their efficiency in handling the work entrusted to them.

Finally, let me quote again the extracts given in the previously published summary of this Report as they are of the utmost importance. "A healthy condition can only be attained by the growth of confidence between all parties. The aim can be stated very simply, namely, that every contract shall be properly planned and placed at a fair price with a respectable contractor, carefully selected as being capable of and likely to do work of the standard required."

## DUTCH UNCLE

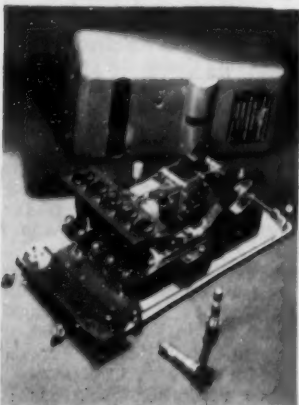
\* Report of the Joint Committee on Tendering Procedure, published on behalf of the R.I.B.A., R.I.C.S. and N.F.B.T.E. Price 6d.

## MOSAICS



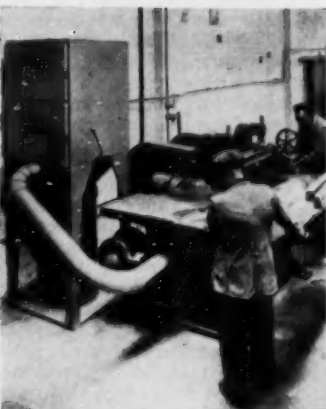
**PLANT**  
**MISCELLANEOUS**  
**E14/7**

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**B2/17**

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**PLANT—GEAR LIFTING**  
**E6/10**

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● Ribblesdale Cement, Ltd., announce that as from March 17, 1954, all outstanding quotations for supplies of cement in lots of less than one ton down to and including half a ton will be subject to the following alterations:—

- (a) For collected lots of 10 to 19 cwt—the existing premium on schedule prices of 15s per ton (inclusive of non-returnable paper bags) to remain in operation;
- (b) for lots of 10 to 19 cwt delivered to site—the premium of 15s on schedule prices to be increased to 20s per ton (inclusive of non-returnable paper bags). This new charge is operative forthwith.

● In a notice to merchants dated April 9, 1954, the British Ironfounders' Association announce that prices for rainwater and soil goods (as detailed in List Series No. 3200, of 1.5.52, amended 27.4.53) have been increased. The prices in these lists are now subject to a plusage of 10 per cent at foot of invoice on all despatches as from April 12, 1954. This plusage applies to both straight lengths and connections. Trade discounts and other allowances as detailed in List Series 3200 continue unaltered.

● Mr. S. Cornthwaite has been appointed Midlands Sales Manager of Marryat & Scott, Ltd., lift manufacturers, and will operate from the Birmingham office at 41, Water Street.

Mr. Cornthwaite has been in the lift industry for 25 years and his experience and advice will be available to architects and engineers in the district.

● Platt Metals, Ltd., of Enfield, announce that they have commenced the production of lead sheet and pipe as independent manufacturers and have appointed as sole distributors K. L. Cobb, Ltd., Suffolk House, Laurence Pountney Hill, London, E.C.4 (Tel. No.: Mansion House 5931-2).

● Stramit Boards, Ltd., announce that Mr. A. W. Pyatt, technical representative for West Midlands area, has removed to 4, Lakehouse Road, Sutton Coldfield, Warwickshire. Telephone number remains unchanged: Erdington 3990.

● Panelec (Great Britain), Ltd., announce that from April 20, 1954, their address will be 27, Hatchlands Road, Redhill, Surrey. Their telephone number—Redhill 3461—will remain unaltered.

● W. H. Heywood and Co., Ltd., Patent Glazing and Roofing Engineers, Bayhall Works, Huddersfield, announce the appointment as Area Representative for South Staffordshire, Worcestershire and Warwickshire of Mr. T. H. Irwin. Mr. Irwin will operate from offices at Partons Road, Kings Heath, Birmingham, 14, in conjunction with Messrs. John Gibbs, Ltd., Partons Road Works, Birmingham, 14, who have acted for many years as Heywood's sole agents in the Midland area.

● The New Research and Development Laboratories of the Quasi-Arc Company, Limited, Bilston, Staffordshire, were opened on March 31 by Mr. J. S. Hutchinson, Chairman of the British Oxygen Group of Companies.

The new laboratories are said to be unique in the equipment and the service provided for the development of new electrodes and welding equipment, and the quality control of electrode production, as well as basic research for the welding industry.

Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate: (a) type of work, (b) address for application. Where no town is stated in the

## CONTRACT • NEWS •

address it is the same as the locality given in the heading, (c) deposit, (d) last date for application, (e) last date and time for submission of tenders. Full details of contracts marked ★ are given in the advertisement section.

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OPEN

### BUILDING

**BERKSHIRE AND READING FIRE  
AUTHORITY.** (a) New fire station,  
Newbury. (b) County Architect, Wilton  
House, Parkside Road, Reading. (c)  
2gns. (e) May 6.

**BORDER R.C.** (a) 6 houses with site  
works, etc., Kirkandrews Moat. (b)  
Clerk of the Council, 5-7, Victoria Place,  
Carlisle. (c) 2gns. (d) April 26.

**CHESTER R.C.** (a) 34 houses, Hunt-  
ington, near Chester. (b) Council's  
Architect, 16, White Friars. (c) 3gns.  
(e) May 10.

**EIRE—DUBLIN C.C.** (a) New out-  
patients' department and various ancil-  
lary works, National Children's Hospital,  
Harcourt Street. (b) Messrs. Beckett and  
Medcalf, 6, Clare Street. (c) £50. (e)  
April 30.

**EIRE—DUBLIN C.C.** (a) 3 blocks of  
flats comprising 77 dwellings, Hard-  
wicke Street Housing Area. (b) City  
Treasurer, Exchange Buildings, Lord  
Edward Street. (c) 15gns. (e) May 18.

**\*HAVANT AND WATERLOO U.C.**  
(a) Pavilion, Cowplain Recreation  
Ground. (b) Engineer and Surveyor,  
Council Offices, Park Road North,  
Havant. (c) 1gn. (e) April 30. See  
page 36.

**LONDON — WANSTEAD AND  
WOODFORD B.C.** (a) 12 garages,  
Woodford Bridge. (b) Messrs. Tooley  
and Foster, Midland Bank Chambers,  
Buckhurst Hill, Essex. (d) April 27.

**MIDDLETON B.C.** (a) 60 houses, Hol-  
lin Estate. (b) Borough Architect, Town  
Hall. (c) 2gns. (e) May 3.

**PETERLEE DEVELOPMENT COR-  
PORATION.** (a) Erection of Section A,  
36 dwellings; Section B, 140 dwellings;  
Section C, 106 dwellings; and Section D,  
28 dwellings; as parts of Acre Rigg  
Development. (b) General Manager,  
Peterlee Development Corporation, Shot-  
ton Hall, Castle Eden, Co. Durham. (c)  
2gns. (e) May 7.

**READING B.C.** (a) 9 shops with 11  
dwellings over and a café, Bath Road  
Estate, Reading. (b) Borough Architect,  
Town Hall. (e) May 8.

**RICKMANSWORTH U.C.** (a) 47  
garages together with site works, Berry  
Lane, Whitfield Way, Orchard Way and  
Shepherds Farm Housing Estates. (b)  
Engineer and Surveyor, Council Offices.  
(c) 2gns. (e) May 1.

**ROCHDALE B.C.** (a) 44 dwellings,  
Abbott Street Estate. (b) Borough Sur-  
veyor, Town Hall. (c) 2gns. (e) May 4.

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Pre-Cast Steel Cladding*

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**SAFFRON WALDEN R.C.** (a) 6 houses and 4 bungalows, Clavering, Essex. (b) Clerk of the Council, Council Offices, Debden Rd. (c) May 1.

**SCOTLAND—FIFE C.C.** (a) (1) 40 houses, Kinglassie (13th and 14th developments); (2) 18 houses, Carnock (3rd development); all trades, each contract. (b) Messrs. James Gentles and Sons, Central Chambers, Kirkcaldy. (c) April 30.

**SHEFFIELD C.C.** (a) 6 additional garages at the abattoir, Sheffield. (b) Town Clerk, Town Hall, 1. (c) £2. (e) April 30.

## PLACED

Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. † denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.

**LEICESTERSHIRE C.C.** (1) College school. (2) Thorpe Acre, Loughborough. (3) William Moss and Sons, Ltd., Queen's Road, Loughborough. (4) £169,881.

**WEYMOUTH B.C.** (1) 120 houses. (2) Littlemoor Estate. (3) Gregory Housing, Ltd., 27, Chapel Road, Worthing. (4) £165,076.

**NOTTINGHAM CORPORATION.** (1) Seven-storey hostel for women. (2) Woodborough Road. (3) John Cawley, Ltd., 151, Canal Street, Nottingham. (4) £144,933.

**LEICESTER CITY COUNCIL.** (1) 136 dwellings. (2) Nether Hall Estate. (3) S. J. Smith and Co. (Bidford), Ltd., Smith Road, Wednesbury, Staffs. (4) £181,876.

**STOURBRIDGE B.C.** (1) 82 houses. (2) Pedmore Fields Estate. (3) G. Wright and Co. (Contractors, Wolverhampton), Ltd., 10, Union Mill Street, Wolverhampton. (4) £109,029. (1) 64 dwellings. (3) Nathan Hyde, 6, Claremont Road, Sedgley, Staffs. (4) £83,390.

**LONDON COUNTY COUNCIL.** (1) 69 flats. (2) Devons Estate, Poplar. (3) Stewart and Partners, Ltd., Baker Street, London, W.1. (4) £163,426. (1) 4 houses, 101 garages. (2) Becontree. (3) Haines and Warwick, Ltd., Seven Kings, Ilford. (4) £17,836.

**WORTLEY (YORKS) R.D.C.** (1) 48 flats, 46 houses, 12 bungalows. (2) Chapel-town, near Sheffield. (3) R. C. Brindley and Co., Ltd., Birdwell, near Barnsley.

**NEWBURY, BERKS.** (1) Church of St. John the Evangelist. (3) Musselwhite and Sons, Ltd., Eastrop Works, Basingstoke. (4) £70,000.

**BRISTOL.** (1) First instalment of departmental stores building, for Lewis's Investment Trust. (2) Haymarket. (3) John Morgan (Builders), Ltd., Cathedral Road, Cardiff. (4) £92,322.

**CROYDON B.C.** (1) School. (2) Shirley. (3) E. H. Smith (Croydon), Ltd., 48, Wellesley Road, Croydon. (4) £116,218.

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**WEST HAM B.C.** (1) 36 houses, 24 maisonnettes, 16 flats. (2) Canning Town. (3) Frank Bilton (London), Ltd., 33, Streatham Place, London, S.W.2. (4) £149,650.

**NORTHAMPTON B.C.** (1) Secondary school. (2) Cherry Orchard. (3) Gee, Walker and Slater, Ltd., Uttroter Old Road, Derby. (4) £134,037.

**ROMFORD B.C.** (1) 40 flats. (2) Firbank Road. (3) Edward Glenny and Sons, Ltd., Ripple Road, Barking, Essex.

**SHEFFIELD CORPORATION.** (1) 176 dwellings. (2) Greenhill-Bradway Estate. (3) Direct Labour. (4) £212,410.

**COVENTRY CORPORATION.** (1) First stage of comprehensive school. (2) Whitely Abbey. (3) Gilbert Ash, Ltd., 1, Stanhope Gate, London, W.1. (4) £75,103.

**LIVERPOOL CORPORATION.** (1) 80 flats in multi-storey block. (2) Boyd Street. (3) Geo. Wimpey and Co., Ltd., Ellesmere Port, Cheshire. (4) £172,587.

**BARROW-IN-FURNESS B.C.** (1) 107 houses. (2) Abbotsmead Estate. (3) Direct Labour Organization. (4) £155,907.

**LONDON, E.C.** (1) Rebuilding hall for Haberdashers' Company. (2) Gresham Street. (3) Sir Robert McAlpine and Sons, Ltd., Park Lane, London, W.1.

**YORK CITY COUNCIL.** (1) 184 houses. (2) Chapel Fields Estate. (3) Sorrell (York), Ltd., Main St., Heworth, York. (4) £221,670.

**BRITISH ELECTRICITY AUTHORITY.** (1) Superstructure, foundations and/or civil engineering works for new power stations. (2) East Yelland, Barnstaple. (3) Staverton Builders, Ltd., Totnes, Devon. (2) Marchwood, near Southampton. (3) Staverton Builders, Ltd. (2) Hams Hall "C," near Birmingham. (3) Staverton Builders, Ltd. (2) Littlebrook "C." (3) Holloway Bros. (London), Ltd., Millbank, S.W.1. (2) Wakefield, Yorks. (3) M. J. Gleeson (Contractors), Ltd., Sheffield. (2) Dunfermline. (3) Ivan Tait. (2) Barony, Ayr. (3) John Laing and Son, Ltd., Carlisle and London. (2) Castle Donnington, Derby, reinforced concrete chimneys. (3) J. L. Kier, Ltd., Westminster, S.W.1. (2) Elstree sub-station. (3) J. L. Eve Construction Co., Ltd., London, S.W.19. Wakefield sub-station. (3) M. Harrison and Co. (Leeds), Ltd.

**LONDON COUNTY COUNCIL.** (1) Superstructure of Burlington School and St. Clement Dane's School. (2) Hammersmith. (3) Tersons, Ltd., Dollis Park, Finchley, N.3. (4) £515,773. (1) School. (2) Studley Rd., Lambeth. (3) Bunting Construction Co., Ltd., Acre Lane, London, S.W.2. (4) £101,527. (1) School. (2) Wimbledon Park Side No. 2. (3) W. J. Simms, Sons and Cooke, Ltd., Mount St., London, W.1. (4) £87,181. (1) Extensions. (2) Norwood Technical College. (3) W. J. Cearns, Ltd., Carpenters Rd., London, E.15. (4) £67,513. (1) Hostel. (2) Leigham Court Rd., Streatham. (3) C. H. Gibson, Ltd., 509, London Rd., Thornton Heath, Surrey. (4) £56,090.

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**OXFORD CORPORATION.** (1) Secondary school. (2) New Marston. (3) Y. J. Lovell and Son, Ltd., Gerrards Cross, Bucks. (4) £97,400.

**TIPTON B.C.** (1) 86 dwellings. (2) Coneygree Rd. (3) Direct labour. (4) £102,949.

**RHONDDA U.D.C.** (1) 75 houses (first development). (2) Graigwen-Trebanog site. (3) B. Roberts and Sons, Trelaw, Tonypandy. (4) £102, 949.

**SURREY COUNTY COUNCIL.** (1) Adaptations to form Fire H.Q. (2) Spurgeon's Orphanage, Reigate. (3) R. Holford and Co., Ltd., Walnut Tree Close, Guildford. (4) £119,282.

**LEICESTER CORPORATION.** (1) 136 dwellings. (2) Nether Hall. (3) S. J. Smith and Co. (Bidford), Ltd., Smith Rd., Wednesbury, Staffs. (4) £181,876.

**ISLE OF ELY C.C.** (1) Girls' High School. (2) Ely. (3) H. J. Firman, Flag Fen, Peterborough.

**IPSWICH B.C.** (1) Chantry infants' school. (3) V. A. Marriott, Ltd., Handford Road, Ipswich. (4) £36,963.

**HARLOW DEVELOPMENT CORPORATION.** (1) Factory. (2) Industrial site. (3) W. and C. French, Ltd., Buckhurst Hill, Essex. (4) £35,893.



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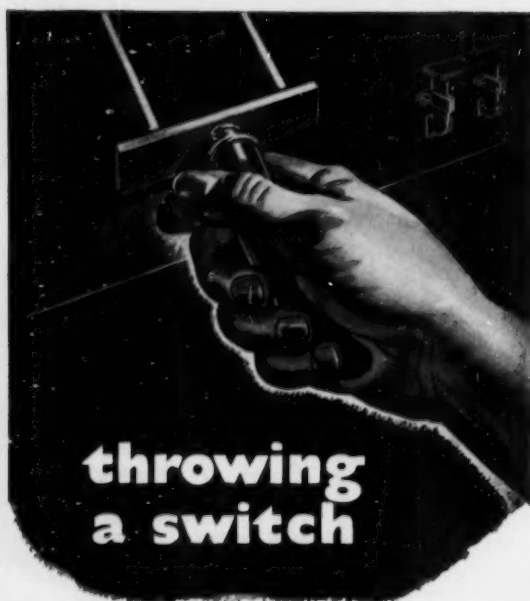
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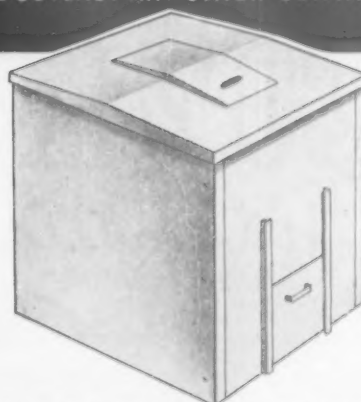
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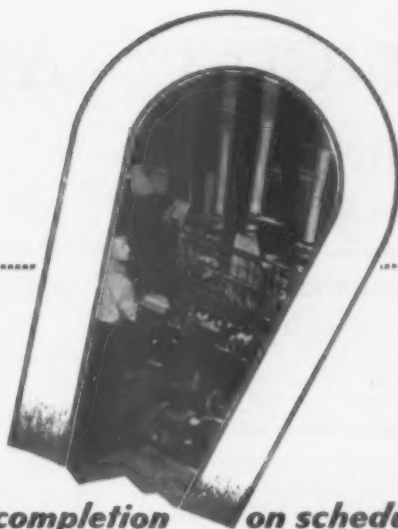
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# ANNOUNCEMENTS

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## APPOINTMENTS

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Services, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is exempted from the provisions of The Notification of Vacancies Order 1952.

### COUNTY BOROUGH OF WEST HAM.

APPLICATIONS are invited from suitably qualified Architect/Planners for the following appointments to work under Thomas E. North, O.B.E., F.R.I.B.A., Dist.T.P. (Borough Architect & Planning Officer) on the reconstruction programme of the Council. The posts are established.

(a) One SENIOR ASSISTANT. Grade A.P.T. VII.

(b) One ASSISTANT. Grade A.P.T. V/VA, and

(c) One ASSISTANT. Grade A.P.T. I/III.

There are also a number of General Assistant (Technical)—General Division Scale—posts available.

Application forms from 70, West Ham Lane, Stratford, E.15 (returnable by May 10, 1954).

[7863]

### BOROUGH OF CHATHAM.

#### APPOINTMENT OF CHIEF ASSISTANT ARCHITECT

APPLICATIONS are invited for the appointment of CHIEF ASSISTANT ARCHITECT, within Grade VII (£735 × £25—£810).

HOUSING ACCOMMODATION WILL BE MADE AVAILABLE IF REQUIRED.

Conditions of appointment and form of application may be obtained from Mr. J. A. T. Richards, Deputy Borough Engineer and Surveyor, Town Hall, Chatham, to whom completed application forms should be returned not later than Friday, May 7, 1954.

Town Hall,  
Chatham.

[7865]

### KNOTTINGLEY URBAN DISTRICT COUNCIL.

#### ARCHITECTURAL ASSISTANT.

(Amended Advertisement.)

APPLICATIONS are invited for the appointment of ARCHITECTURAL ASSISTANT in the Surveyor and Engineer's Department. Salary according to qualifications and experience at one of the following Grades of the Administrative, Professional and Technical Division of the National Scale of Salaries, viz.:

A.P.T. III, £550-£595.  
A.P.T. IV, £580-£625.

Candidates should be able to measure up and settle the interim and final certificates on building contracts.

The appointment will be subject to the Local Government Superannuation Act, and to the passing of a medical examination.

The Council will give consideration to the question of housing accommodation, if desired.

Applications, stating age, qualifications and experience, together with copies of two recent testimonials, must be sent to the undersigned not later than first post on Tuesday, 27th April, 1954.

STUART D. HILL,

Clerk of the Council.

Town Hall,  
KNOTTINGLEY,  
Yorks.

15th April, 1954.

[7869]

### LONDON COUNTY COUNCIL.

#### ARCHITECTS DEPARTMENT.

VACANCIES for ARCHITECTS in Schools and Housing Divisions. Salary to £721.

Particulars and application forms from Architect (AR/EK/A/3), County Hall, S.E.1. (374). [0141]

## APPOINTMENTS—contd.

### CITY OF BELFAST.

#### APPOINTMENT OF EDUCATION ARCHITECT.

APPLICATIONS are invited for this post from architects possessing high qualifications and wide experience in the design, planning and supervision of the erection of schools and other educational institutions.

Salary Scale — £1,600 × £105 — £1,810 × £55 — £1,865 per annum.

The commencing salary may be fixed at a salary higher than the minimum in exceptional circumstances. Candidates must be not more than 45 years of age on 1st September, 1954, but this condition shall not apply to officers of the Council.

Preference will be given to candidates who have served in H.M. Forces provided the conditions of appointment are fully satisfied.

The appointment is subject to the approval of the Ministry of Education for Northern Ireland.

Further particulars of the duties and conditions of appointment may be obtained from the Director of Education, Education Office, Academy Street, Belfast.

Applications setting out the candidate's age, qualifications and experience must be lodged with the undersigned not later than 12 noon on Saturday, 15th May, 1954.

Canvassing in any form, direct or indirect, oral or written will, if proved to the satisfaction of the appointing authority, disqualify a candidate for appointment.

JOHN DUNLOP,  
Town Clerk.

City Hall,  
BELFAST.

### CITY OF BIRMINGHAM.

#### CITY ARCHITECT'S DEPARTMENT.

#### APPOINTMENT OF PRINCIPAL ARCHITECT (SCHOOLS).

APPLICATIONS are invited from suitably qualified Architects for the above appointment at a salary of £1,250 per annum, rising by annual increments of £50 to a maximum of £1,450 per annum.

A separate section of the City Architect's Department is engaged on the carrying out of a large school building programme consisting of all types of school buildings; to be erected in both traditional and non-traditional construction.

The Principal Architect will be required to act as deputy to the Senior Architect in control of the section, and an extensive knowledge of all types of school buildings is required. The applicant should possess a high standard of design and have had good administrative experience.

The post is permanent, superannuable, subject to a medical examination and to one month's notice on either side.

Applications, endorsed "Principal Architect (Schools)," stating age, present post and salary, qualifications and experience, together with the names of two persons to whom reference can be made, should reach the undersigned not later than May 3, 1954.

Canvassing disqualifies.

A. G. SHEPPARD FIDLER,

City Architect.

Civic Centre, Birmingham, 1.

[7872]

### YORKSHIRE ELECTRICITY BOARD.

#### HEAD OFFICE.

#### ARCHITECTURAL DRAUGHTSMAN.

THE duties include the preparation of working drawings and details of substations, etc. Applicants should have a sound knowledge of Industrial and Commercial Building Construction.

Salary—N.J.B. Schedule D Grade 6 £433/£567 per annum.

Applications, giving full details of age, qualifications and experience, together with the names of two referees, should be forwarded to the Secretary, Yorkshire Electricity Board, Wetherby Road, Scarcroft, Leeds, not later than 4th May, 1954. [7879]

## APPOINTMENTS—contd.

### STAFFORDSHIRE COUNTY COUNCIL.

#### EDUCATION COMMITTEE.

ASSISTANT DEPUTY EDUCATION ARCHITECT (SALARY J.N.C. SCALE "C"—£1,050 × £50—£1,250).

APPLICATIONS are invited from candidates who are members of the R.I.B.A. to act as Liaison Officer between Building Sites and Office, and who have had considerable experience in supervision and erection of large buildings, preferably educational establishments.

Applicants must be car owners; a car allowance on the County Council scale will be granted to the successful applicant.

Form of application and further information can be obtained from:—

A. C. H. Stillman, Esq., F.R.I.B.A., County Education Architect, Green Hall, Lichfield Road, Stafford.

The completed form of application must be returned not later than MONDAY, MAY 3rd, 1954.

T. H. EVANS,  
Clerk of the County Council.

[7870]

## CONTRACTS

### THE HAVANT AND WATERLOO URBAN DISTRICT COUNCIL

Invite TENDERS for the ERECTION of a PAVILION at the Cowplain Recreation Ground, off Padnell Road, Cowplain.

A copy of the Specification, Drawings and Conditions of Contract may be obtained from the Engineer and Surveyor, Council Offices, Park Road North, Havant, on payment of a deposit of £1 1s, which will be returned upon receipt of a bona fide tender and the return of all documents.

No tender will be received except in a plain sealed envelope which may bear the word "Tender" followed by the subject to which it relates, but shall not bear any name or mark indicating the sender.

Tenders must be delivered not later than 12 noon on Friday, April 30, 1954, to the Clerk of the Council, Town Hall, Havant.

The Council do not bind themselves to accept the lowest or any tender.

[7861]

## PUBLIC NOTICE

### THE BUILDING SURVEYORS' INSTITUTE, Craven House, 121, Kingsway, London, W.C.2.

President: W. Alexander, A.R.I.B.A., M.R.San.I.

General Secretary:

A. Ethell, F.C.I.S., F.A.C.C.A., F.S.S.

AT a Meeting of Members held in the Royal Sanitary Institute on Saturday, the 3rd April, the Council submitted a Report advising Members that they recommended that admission to this Institute should be by examination after the 1st September of this year, only special cases being exempt after this particular form of entry. They also gave detailed reports of the progress of the Institute to date, and other matters of general interest. Any member of the profession holding a position warranting consideration for entrance without examination are advised that it is in their interest to make such application before the 1st September, and if possible considerably earlier than that date. A full print of the proceedings of the Meeting held at the above Hall is in the course of preparation and any interested persons may have a copy of this on application to the General Secretary at the offices of the Institute.

By Order of the Council,  
Signed A. ETHELL.

[7868]

## MISCELLANEOUS SECTION

RATE: 1/6d. per line, minimum 3/-, average line 6 words. Each paragraph charged separately.

BOX NOS. add 2 words plus 1/- for registration and forwarding replies which should be addressed c/o, "The Architect & Building News," Dorset House, Stamford Street, London, S.E.1.

PRESS DAY Monday. Remittances payable to Iliffe & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.

No responsibility accepted for errors.

## ARCHITECTURAL APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is exempted from the provisions of The Notification of Vacancies Order 1952.

**WANTED** immediately, Junior Assistant (having completed National Service) with some Architect's office experience.—Please reply, stating age, salary and experience, to Lambert & Oliver, Chartered Architects, Bridport, Dorset. [7871]

**ARCHITECT'S** Assistant reqd. Must be good draughtsman; working drawings, details and good knowledge of construction. Experience in supervision an asset.—Write stating previous experience and salary reqd. to H. S. Goodhart-Rendel & Partners, Kirkland House, 22, Whitehall, S.W.1. [7862]

**ARCHITECTURAL** Assistants required; applicants should have completed their National Service and have had at least two years' office experience.—Apply in writing, stating age, training and experience, to the Chief Staff Architect, Ilford Limited, Romford, Essex. [7836]

**SAMUEL MORRISON & PARTNERS** require assistants for interesting contemporary work in the following spheres: Schools, housing, factories and shops with particular emphasis on industrial design; new offices are to be opened and they will be situated in a pleasant old vicarage in its own grounds; salary according to ability and experience.—Derwent House, Full St., Derby. [7856]

**ARCHITECTURAL** Draughtsmen. The Central Plant Department of Philips Electrical Industries, Ltd., requires the services of two Architectural Draughtsmen to meet expansions in programme. The vacancies, which are located at Mitcham, require men capable of working on their own initiative and carry good commencing salaries and excellent prospects of promotion.—Please apply in writing to: Personnel Officer, Mitcham Works, Ltd., New Rd., Mitcham Junction, Surrey, quoting ref. K.2.A. [7877]

**SENIOR** Assistant required in London (West End) Office. Must be quick and accurate draughtsman with sound experience of working drawings and details. Age about 35/40 years and possessing firmness and tact in the handling of Junior staff, about six in number. Qualifications are desirable, but not essential, and experience is the main consideration. The Practice has a large volume of work, including several school projects. Salary £900 to £1,000 per annum. Staff pension scheme under consideration.—Box 4889. [7876]

## SITUATIONS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is exempted from the provisions of The Notification of Vacancies Order 1952.

**EFFICIENT** Quantity Surveyor required with sound experience of modern office, welfare and canteen buildings for industry.—Applications will be treated in confidence.—Reply, stating age, qualifications, experience, salary expected and when at liberty to Box 4727. [7852]

## SITUATIONS VACANT—contd.

**SURVEYOR** required. Young man with previous experience of billing, site measurement, measurement of sub-trades and contractors. Apply in confidence stating age, experience and salary required to General Manager, H. C. Wakefield & Sons, Ltd., Whitson St., Bristol, 1. [7864]

**ARTICLED** Pupil or Junior required by Quantity Surveyor, no premium. Age 15-18, with G.C.E. or equivalent for R.I.C.S. Must be keen, accurate at figures, excellent prospects to learn the profession.—Reply in writing, stating age, education, etc., George Lewis & Son, 49, Sheepcote Rd., Harrow, Middlesex. [7860]

**CLERK** of Works required to supervise erection of £1,000,000 office building in London. Must have had very considerable experience in high quality building. Knowledge of prestressed R.C. construction desirable. Only those with highest possible qualifications need apply in writing, stating architects by whom employed, giving dates and particulars of buildings supervised as Clerk of Works, to Sir John Burnet, Tait & Partners, 10, Bedford Sq., W.C.1. [7878]

**VAUXHALL MOTORS, Ltd.**, require a Building Supervisor and Surveyor. This vacancy has arisen due to promotion. Applicants must have technical qualifications and be capable of supervision of maintenance repairs to buildings, machine foundations, drainage and general advice on all types of buildings. Selected candidate will be responsible to the Plant Engineer and be his advisor on all questions relating to building matters and must also be capable of handling labour in a supervisory capacity. Good salary to the right applicant. Applications should state qualifications and experience in chronological order also indicating salary expected. The company offers a good pension scheme, recreational and canteen facilities. Applications to Route 215, Vauxhall Motors, Ltd., Kimpton Rd., Luton, Beds. [7873]

## PLANT FOR HIRE

**CHASESIDE** mechanical shovels, Major type, by day, week or contract, with drivers; tipping lorries supplied if required with shovels.—Henry Froud, Ltd., Primrose Wharf, Tunnel Ave., Greenwich, S.E.10. Tel. Greenwich 0072-3. [0138]

## FOR SALE

**ELECTRICITY** meters reconditioned, all types, quarterly credit and repayment.—The Electric Meter Company, Dept. AN46, Castle Circus House, Torquay. [7839]

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## WANTED

**BRICKWORK** and pointing wanted, old or new, any amount.—G. Spring, Brickwork Contractor, 14, Ranelagh Rd., Wood Green, N.14. Bow 5610. [7867]

## INSURANCE

**ARCHITECTS'** Indemnity Insurance effected. Please write for Proposal Form to

E. J. SAXBY, Incorporated Insurance Broker, 37a, Carfax, Hove, Sussex. Tel. 990. [7660]

## LITERARY

**AUTHORS** invited submit MSS all types (including poems) for book publication.—Stockwell, Ltd., Elms Court, Ilfracombe. (Estd. 1898.) [7874]

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## MISCELLANEOUS

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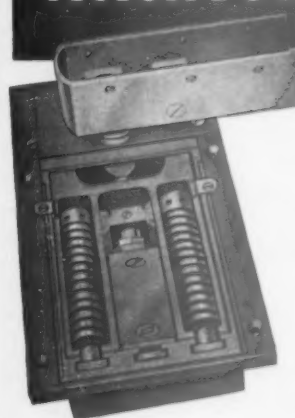
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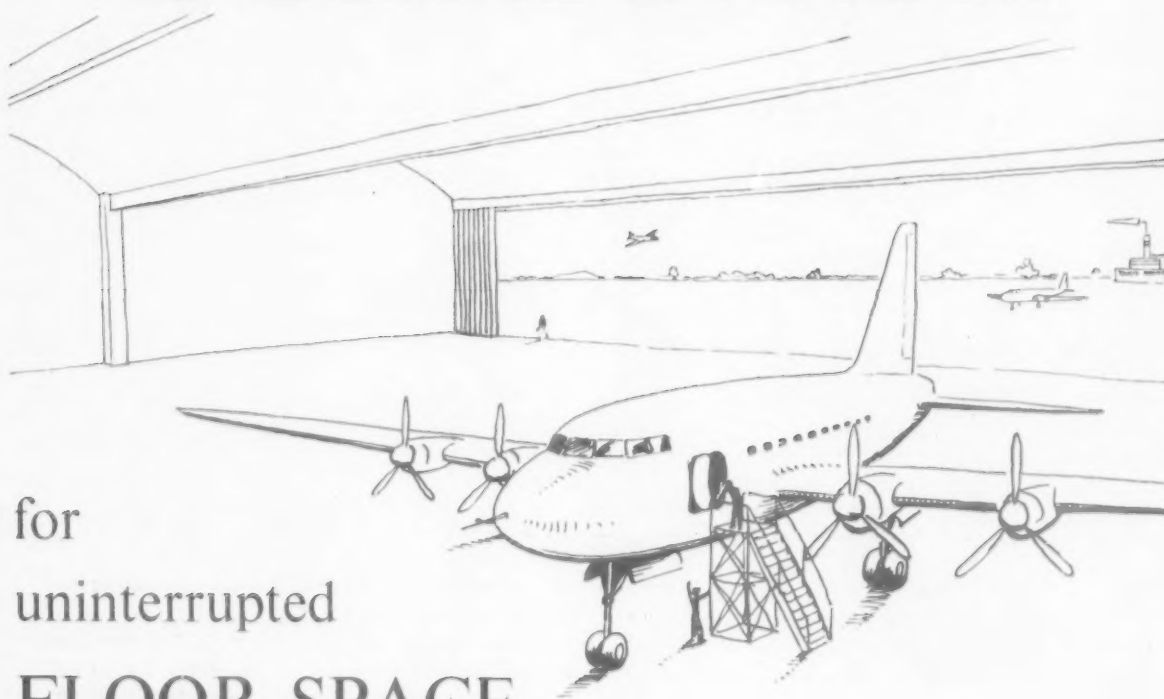
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